Note: This publication is discontinued.

Please refer to the ECB's banking supervision website for the latest information.

EUROPEAN CENTRAL BANK

EUROSYSTEM



ASSET QUALITY REVIEW

Phase 2 Manual



In 2014 all ECB publications feature a motif taken from the €20 banknote.

March 2014

© European Central Bank, 2014

Address Kaiserstrasse 29, 60311 Frankfurt am Main, Germany
Postal address Postfach 16 03 19, 60066 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Internet http://www.ecb.europa.eu

All rights reserved. Reproduction for educational and non-commercial purposes is permitted provided that the source is acknowledged.

ISBN 978-92-899-1254-9
EU catalogue number QB-02-14-255-EN-N

CONTENTS

Contents 1

List of Tables 3

List of Figures 6

Introduction 8

a Context around Phase 2 of the AQR as part of the comprehensive assessment 8

b Key outputs of Phase 2 of the AQR 9

c Summary of Phase 2 Methodology Workblocks 10

d AQR supporting tools 14

e Timelines 19

1 Processes, policies and accounting review 20

1.1 Summary of approach 20

1.2 Indicative timeline 23

1.3 Illustrative models, parameter sheets and templates 23

1.4 Areas in scope for review 24

1.5 Objective assessment for each question 31

1.6 CVA challenger model 33

1.7 Outputs 33

2 Loan tape creation and data integrity validation 35

2.1 Summary of the approach 35

2.2 Indicative timeline 37

2.3 Illustrative models, parameter sheets and templates 37

2.4 Creation of the “loan tape” 37

2.5 Data manipulation 50

2.6 Data integrity validation analysis 56

2.7 Further guidelines on the execution of DIV 66

2.8 Steps banks should take in providing loan tape to ensure as smooth a process as possible 67

2.9 Approach to dealing with unavailability of data for a particular legal entity 67

2.10 Options for dealing with lack of completeness/accuracy of specific fields 68

2.11 Outputs 69

3 Sampling 70

3.1 Summary of the approach 70

3.2 Basis in standards on auditing 73

3.3 Indicative timeline – NCA bank teams may begin the process before these timelines. 74

3.4 Illustrative models, parameter sheets and templates 75

3.5 Approach to selecting the sample 76

3.6 Tolerance for audit error and calibration of parameters 95

3.7 Outputs 99

4 Credit file review 100

4.1 Summary of the approach 100

4.2 Indicative timeline 102
4.3 Illustrative models, parameter sheets and templates 104
4.4 Credit file review preparation 105
4.5 Classification review 109
4.6 Individual impairment and provisioning review 121
4.7 Implications of findings for capital calculation and provisioning going forward 142
4.8 Outputs 143
5 Collateral and real estate valuation 144
5.1 Summary of the approach 144
5.2 Indicative timeline 146
5.3 Illustrative models, parameter sheets and templates 146
5.4 Required operating process to carry out revaluation 146
5.5 Information required for appraisal 149
5.6 Real estate valuation approach 150
5.7 Shipping and aviation 159
5.8 Other assets 160
5.9 Outputs 160
6 Projection of findings of credit file review 161
6.1 Summary of the approach 161
6.2 Indicative timeline 162
6.3 Introduction 162
6.4 Regulatory basis 163
6.5 Illustrative models, parameter sheets and templates 168
6.6 Approach to projecting findings 168
6.7 Outputs 175
7 Collective provision analysis 176
7.1 Summary of the approach 176
7.2 Indicative timeline 180
7.3 Illustrative models, parameter sheets and templates 180
7.4 Methodology review 181
7.5 Challenger model – Probability of Impairment (PI) 184
7.6 Challenger model – Cure Rate (CR) 189
7.7 Challenger model – Loss given loss (LGL) 199
7.8 Challenger model – Loss given impairment (LGI) calculation for non-retail exposures 208
7.9 Challenger model – Adjustment for one-off circumstances 210
7.10 Challenger model – provisioning calculation 210
7.11 Application of findings 211
7.12 Outputs 212
8 Level 3 fair value exposures review 214
8.1 Summary of approach 214
8.2 Element 1: level 3 revaluation of non-derivative assets 215

8.3 Element 2: Core processes review 228
8.4 Element 3: Derivative pricing model review 243
9 Determine AQR-adjusted CET1% and define remediation activities for banks following the comprehensive assessment 256
9.1 Summary of the approach 256
9.2 Indicative timeline 259
9.3 Illustrative models, parameter sheets and templates 259
9.4 Checks on the bank's calculation of CET1% 259
9.5 Determination of the AQR-adjusted CET1% 260
9.6 Specific list of adjustments that a bank may be expected to include in future accounts or other relevant external reporting 265
9.7 Outputs 266
10 Quality assurance and progress tracking 267
10.1 Summary of approach 267
10.2 Indicative timeline for QA 272
10.3 Overview of quality assurance 272
10.4 NCA QA execution guidance 274
10.5 Outputs: QA issue log 283
10.6 Progress tracking 284

LIST OF TABLES

Table 1 Illustrative models and parameter sheets 15
Table 2 Templates 16
Table 3 Outputs required from NCA bank teams for the AQR 18
Table 4 Indicative timeline for PP&A review 23
Table 5 Models, parameters and templates for PP&A review 23
Table 6 Example of objective assessment for PP&A review 32
Table 7 Outputs for PP&A review 34
Table 8 Indicative timeline for DIV 37
Table 9 Illustrative models, parameter sheets and templates for DIV 37
Table 10 Additional segments for which data must be submitted for each "in-scope" portfolio 39
Table 11 Signs of potential misclassification for segmentation checks 48
Table 12 List of fields to be aggregated to debtor level for non-retail exposures 51
Table 13 Fields required to be created for retail exposures 52
Table 14 Fields required in the merged loan tape for non-retail exposures (debtor tape) 53
Table 15 Fields required in the merged loan tape for non-retail exposures (facility and collateral view) 54

Table 16	Fields required in the merged loan tape for retail exposures	55
Table 17	RAG triggers for field specific checks	60
Table 18	Cross-field checks	61
Table 19	RAG triggers for cross-field checks	61
Table 20	RAG triggers for cross-time checks	63
Table 21	RAG triggers for forbearance validation	64
Table 22	Outputs from DIV	69
Table 23	Indicative timeline for sampling	75
Table 24	Illustrative models for sampling	75
Table 25	Templates for sampling	76
Table 26	List of fields of the sampling dataset	78
Table 27	List of fields from the sampling dataset required for stratifying by riskiness	81
Table 28	Definition of stratification variables	82
Table 29	List of fields from the sampling dataset required to stratify by exposure size	84
Table 30	List of fields from the sampling dataset required to select the priority debtors	87
Table 31	List of fields from the sampling dataset required to calculating the sample size	89
Table 32	Statistical sufficiency parameters table provided by CPMO	90
Table 33	List of fields from the sampling dataset required to designate specific debtors for the sample	93
Table 34	Outputs for sampling workblock	99
Table 35	Indicative timeline for the credit file review	103
Table 36	Parameter sheet for credit file review	104
Table 37	Templates for credit file review	105
Table 38	Minimum impairment triggers for IAS 39 loss events	114
Table 39	Outputs for credit file review	143
Table 40	Indicative timeline for collateral and real estate valuation	146
Table 41	Template for physical assets revaluation	146
Table 42	Template for feeding back yield benchmarks (in %)	154
Table 43	Illustration of net effective rent calculation	155
Table 44	Illustration of template for feeding back valuation per unit area benchmarks (m2)	156
Table 45	Illustrative example of valuation based on DCF for a residential property development	157
Table 46	Minimum risk premia (%)	157
Table 47	Minimum risk premia benchmarks	158
Table 48	Outputs for Physical Asset Review workblock	160
Table 49	Indicative timeline for the projection of findings of the credit file review	162
Table 50	Illustrative models for projection of findings	168
Table 51	Template for projection of findings	168
Table 52	Indicative timeline for collective provision analysis	180
Table 53	Illustrative models for the collective provision analysis	180
Table 54	Templates for the collective provision analysis	181

Table 55	Product-based segmentation	186
Table 56	LTV-based segmentation (where LTV calculated based on indexed last valuation)	187
Table 57	Channel-based segmentation	187
Table 58	Risk-based segmentation	187
Table 59	Segments and PI	189
Table 60	Product-based segmentation	190
Table 61	LTV-based segmentation	209
Table 62	Outputs for Collective provision analysis	213
Table 63	Fair value adjustments	217
Table 64	Indicative timeline for level 3 revaluation of non-derivative assets	218
Table 65	Illustrative models, parameter sheets and templates for the level 3 revaluation of non-derivative assets	218
Table 66	Outputs for level 3 revaluation of non-derivative assets	228
Table 67	Indicative timeline for core processes review	231
Table 68	Illustrative models, parameter sheets and templates for the core processes review	231
Table 69	Qualitative framework dimensions	232
Table 70	Pricing model validation and monitoring process review	233
Table 71	CVA calculation process review	235
Table 72	Other fair value adjustment calculation processes review	236
Table 73	IPV process review	237
Table 74	P&L analysis process review	238
Table 75	New product approval and permitted instrument monitoring process review	239
Table 76	Outputs for core processes review	243
Table 77	Indicative timeline for the derivative pricing model review	245
Table 78	Illustrative models, parameter sheets and templates for the derivative pricing model review	245
Table 79	Derivative pricing model review	246
Table 80	Fair value adjustments	250
Table 81	Outputs for the derivative pricing model review	255
Table 82	Indicative timeline for the AQR-adjusted CET1% calculation	259
Table 83	Illustrative models, parameter sheets and templates for the AQR-adjusted CET1% calculation	259
Table 84	Outputs for the AQR-adjusted CET1% calculation	266
Table 85	Summary of responsibilities for QA and progress tracking	268
Table 86	Summary of templates used in communication between NCA and CPMO	269
Table 87	Summary of responsibilities for QA and progress tracking	270
Table 88	Indicative timeline for completion of NCA quality assurance	272
Table 89	NCA quality assurance framework	275

LIST OF FIGURES

Figure 1	Illustration of Phase 2 Workblocks	10
Figure 2	Data structure	40
Figure 3	Merging time snapshots	56
Figure 4	Steps to selecting the sample	76
Figure 5	Illustrative example of how the stratified sample is done for each portfolio	80
Figure 6	Cut-off points used for stratification of an example large corporate portfolio (by bucket)	85
Figure 7	Number of debtors allocated to each stratum of an example large corporate portfolio	86
Figure 8	Strata subject to scrutiny for non-retail portfolios	88
Figure 9	Strata subject to scrutiny for residential real estate portfolios	88
Figure 10	Summary tables of number of debtors and aggregated exposure per stratum for an example large corporate portfolio (with exclusions e.g. ECAI CQS>4 removed)	91
Figure 11	Sample size per stratum for an example large corporate portfolio	92
Figure 12	Sample size per stratum for an example large corporate portfolio when forbearance information is not available	92
Figure 13	Reserve sample for an example large corporate portfolio	94
Figure 14	Illustrative representation of the meaning of the <5% sampling error: reported and adjusted provisions for a stylised portfolio, in percentage points over total exposure	96
Figure 15	Data required to simulate adjustment error for an example large corporate portfolio	97
Figure 16	Example probability of adjustment as one parameter for the simulation of the adjustment error	98
Figure 17	Example severity of adjustment as one parameter for the simulation of the adjustment error	98
Figure 18	Error analysis on example portfolio	99
Figure 19	Flowchart for the credit file review	104
Figure 20	Claims and debtor asset categories	137
Figure 21	Decision tree for valuation purposes	152
Figure 22	Calculation of provision misstatement	170
Figure 23	Adjustment for trivial provisioning misstatement	170
Figure 24	Calculation of provision misstatement stratum average	171
Figure 25	Calculation of average provision misstatement for common risk strata	171
Figure 26	Calculation of average NPE misstatement for common risk strata	172
Figure 27	Identification of Strata that show evidence of overestimation of provisions	172
Figure 28	Adjustment for confirmed anomalies	173
Figure 29	Projection of findings to unsampled portfolio	174
Figure 30	Illustrative output of challenger model analysis	178
Figure 31	Roll rate matrix for CR	192
Figure 32	One-year migration matrix for CR	194
Figure 33	Adjusted one-year migration matrix for CR	196
Figure 34	Four-year migration matrix for CR	197

Figure 35	Cure rates within the four-year migration matrix for CR	198
Figure 36	Weibull function applied on observed migration behaviour	199
Figure 37	Illustration of retail mortgages LGL framework	201
Figure 38	Illustration of LGL formula	203
Figure 39	Analysis of cumulative recoveries for write-off cases	208
Figure 40	Illustration of table using retail mortgage segments as an example	211
Figure 41	Illustrative mortgage pool valuation	223
Figure 42	Core processes review illustration	230
Figure 43	Illustration of AQR-adjusted CET1% approach	257
Figure 44	Impact from fair valued exposures	264
Figure 45	AQR-adjusted CET1% calculation	265
Figure 46	Overview of progress tracking, QA structure	267

INTRODUCTION

This manual has been written for the national competent authorities (NCAs) and their third party support to provide the information necessary to execute Phase 2 of the Asset Quality Review (AQR).

This introduction aims to explain the high-level methodology for the AQR Phase 2 and the approach for communicating the methodology to all involved parties.

Phase 2 of the AQR will begin in full following the completion of the portfolio selection in mid-February. This manual provides the detailed methodology for the exercise. Successful execution of the AQR Phase 2 will require consistent application of the centrally-defined methodology at a national level. As NCAs may rely on a significant number of third party providers to support the execution of the AQR, the methodology must be clearly syndicated to all of the practitioners involved. NCAs remain accountable for the execution of the AQR at a national level and must therefore take responsibility for briefing the third parties appointed by them to form NCA bank teams together with NCA staff. The Central Project Management Office (CPMO) may provide additional technical support and clarification (as the author of the methodology), and the central Quality Assurance and Technical Assistance Team (QA&TAT) within the CPMO will provide ongoing technical assistance.

Note: The term "fair value" should be taken throughout to refer to the valuation of available-for-sale (AFS) assets, as well as assets in the held-for-trading portfolio or assets held at fair value through the profit and loss statement (P&L).

a Context around Phase 2 of the AQR as part of the comprehensive assessment

As stated in the comprehensive assessment (CA) press release (23 October 2013), the ECB and the participating national competent authorities (NCAs) responsible for conducting banking supervision will carry out a comprehensive assessment of significant banks (banks), in line with the provisions of the regulation on the single supervisory mechanism (SSM Regulation). One of the three elements of the Comprehensive assessment will be an Asset Quality Review (AQR). Following the completion of Phase 1 of the AQR (Portfolio Selection), Phase 2 - execution of the AQR - will begin. This document constitutes the "Manual" to be followed in executing Phase 2 of the AQR: The "Phase 2 Manual".

As stated in the comprehensive assessment press release (23 October 2013): The asset quality review will be conducted with reference to harmonised definitions. This means that the AQR will fully comply with the relevant accounting principles (e.g. for IFRS banks – IAS 39, IAS 37,

IFRS 13). The Manual has been written with a focus on IFRS principles, though some significant banks apply national GAAP. For these banks, NCA bank teams will be required to align as closely as is appropriate to the Manual given national GAAP rules.

Nevertheless, the AQR is a prudential exercise, focused on providing the necessary clarity on the banks that will be subject to the ECB's direct supervision. Therefore, for the purposes of the AQR, to ensure consistency of findings across banks, further guidance is provided on particular topics around how to apply the principles in the accounting rules. These represent ECB thresholds used for prudential purposes and as such will expire at the end of the exercise. The AQR should not be seen as an attempt to introduce greater prescription into the accounting rules outside of the existing mechanisms. Banks would not be expected to incorporate into policies, processes or reporting findings from the AQR that relate to a Bank failing to be the right side of the ECB threshold if they are compliant with the relevant accounting principles. However, for prudential purposes they may be required to capitalise for a shortfall relative to the ECB threshold in incremental Pillar 2 capital requirements.

The AQR will apply a simplified version of the European Banking Authority (EBA) approach to NPE definition which has been defined in concert with the EBA to allow a consistent "simplified approach" to be applied by banks ahead of the full implementation[1] of the EBA NPE definition on 31 December 2014. For the avoidance of doubt, it should be noted that this NPE definition is a prudential measure.

b Key outputs of Phase 2 of the AQR

There will be two primary outputs from Phase 2 of the AQR:

- **Key issues to include in a letter (or other form of supervisory communication) to the relevant bank:** Following completion of the CA, NCAs will produce a letter to significant banks outlining any areas where the bank is found to be outside of accounting principles and the required remediation actions the bank would be expected to take (including adjustments to the carrying values of assets). These issues would be expected to lead to adjustments to available capital and hence be reflected in Pillar 1 capital requirements at the next relevant reporting date. For the avoidance of doubt – areas where the bank falls short of the "ECB threshold" but is in line with accounting standards would not be included in the letter to the bank.

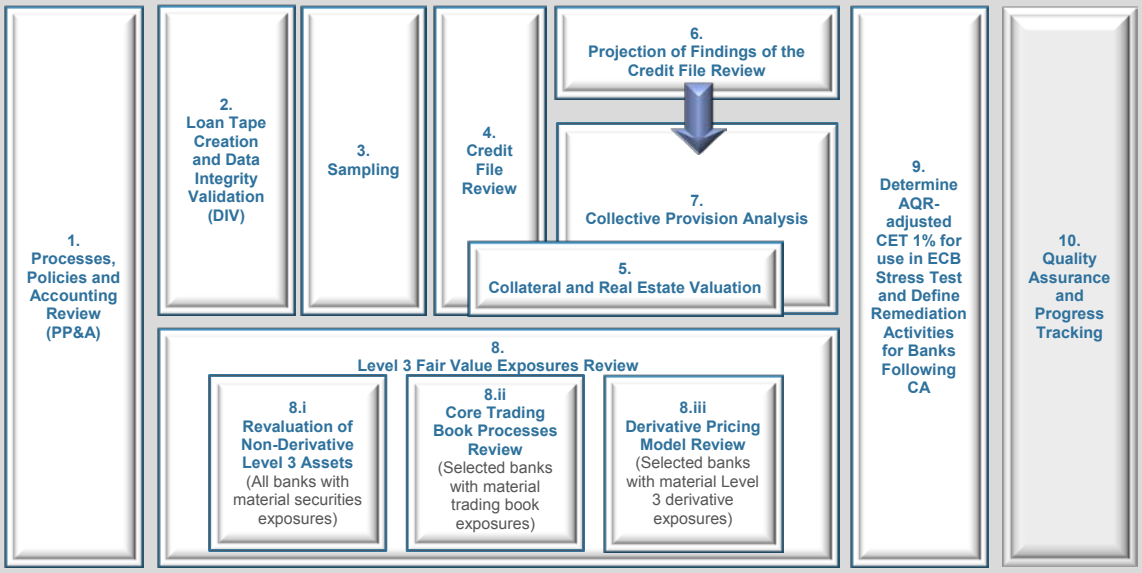
[1] On 21 October 2013 the EBA issued a final draft ITS on forbearance and non-performing exposures. The ITS is to be implemented by 31 December 2014. As such banks cannot be expected to fully comply by 31 December 2013. As a result, banks require practical guidance about how to implement the ITS guidelines on a best efforts basis (i.e. provide a "simplified approach" for the AQR).

- **Inputs to the stress test:** The AQR will generate a series of parameters that will act as inputs to the stress test process. The key inputs to the stress test will be: Any adjustments to data segmentation highlighted by DIV; An AQR-adjusted Common Equity Tier 1% (CET1%) parameter (to allow the impact of the AQR to be applied to stress test projections of the CET1%); Probability of Impairment (PI) and Loss Given Impairment (LGI) parameters for use in the stress test. The way these parameters will be used in the stress test is pending the final methodology for the stress test, which is currently underway.

c Summary of Phase 2 Methodology Workblocks

The high level process for Phase 2 of the AQR will contain 10 different workblocks, as illustrated in the figure below:

Figure 1 Illustration of Phase 2 Workblocks



The review will be led by an NCA bank team that may involve third party audit firms and/or other asset appraisal specialists (depending on the capabilities of the auditor) - together we term this group the "NCA bank team". Each element of the review is summarized in more detail below and in detail in the following Chapters of the Manual:

1. **Processes, policies and accounting review:** bank processes, policies and accounting practices have a key impact on the carrying values of assets in banks' balance sheets and so must be reviewed. The review will represent a 'bare minimum' review of the key topics that influence accounting balance sheet valuations. Key topics to be covered include:

application of fair value hierarchy; accounting classifications (e.g. as Available for Sale) etc.; high-level credit valuation adjustment (CVA) approach and challenger model analysis; provisioning approach; treatment of non-performing exposures (NPEs) and forbearance; etc. *This will be carried out between mid-February and late March, or as third party on-boarding allows.*

2. **Loan tape creation and data integrity validation (DIV):** the credit analysis (sample selection and collective provisioning challenger model creation) will be based on a "loan tape" provided by the bank. This "loan tape" includes basic account information such as segment classification, status, identifiers of the loan/entity. It must be ensured that the data is of sufficient quality to perform the required analysis. This will involve automated checks on the data set and may also include subsequent inputs from the credit file review process. *This will be carried out from mid-February to mid-April with additional findings from credit file review being fed back up to the end of Phase 2*

3. **Sampling:** a credit file review will be carried out, involving the review of specifics (such as loan classification and provisioning) of a particular credit (i.e. loan, advance, commitment or other off-balance sheet exposure) in detail. Given the volume of analysis involved it is not possible to review all exposures in a portfolio. Therefore sampling is conducted in a manner that the sample chosen is both large enough, and representative enough, to allow for robust analysis. The size of the sample will depend on the homogeneity of the portfolio; the risk of the portfolio, the total number of debtors and the level of debtor concentration. Samples can be expected to be in the range of 1-20% of total exposure in a portfolio. The approach to sampling is consistent with best practice adherence to ISA 530. *Sampling will happen immediately following DIV*

4. **Credit file review:** the credit file review will involve NCA bank teams verifying a credit exposure has been correctly classified in the bank's systems (e.g. correct regulatory segment, NPE status, impairment status) and that, if a specific provision is required, it has been set at an appropriate level. The credit file review workblock will also be used to identify cases where a loss event trigger has not been hit, but a loss is more likely than not. For these cases the expected future loss will be measured for incorporation into the stress test. Credit file review covers all loans, advances, financial leases and other off-balance sheet items including specialised asset finance such as shipping and project finance. *Credit file review will begin with priority credits (i.e. top 10 exposures by risk classification) in March and continue for the remainder of the sample in April through to late June*

5. **Collateral and real estate valuation:** a key input to determining appropriate carrying amounts is the valuation of collateral or on-balance sheet real estate. Generally, the

majority of collateral will be re-valued for all debtors selected in the sampling which do not have a third-party valuation less than one year old. This will be carried out by NCA bank teams and fed into steps 4 and 7. Some use of valuations by independent internal units may be allowed in particular circumstances described later in the document. *This analysis will start as soon as possible after credit file review starts, and run in parallel with the credit file review between mid-March and the end of June*

6. **Projection of findings of credit file review:** findings of the credit file review will then be projected to the wider portfolio. Projection of findings will be applied to homogeneous pools of exposure (in line with audit guidelines). A pragmatic approach will be applied with a series of safeguards to avoid over estimation of misstatement due to sample size. *Projection of findings will happen in late June*

7. **Collective provision analysis:** smaller, homogeneous, impaired exposures are typically provisioned using a collective provisioning approach – that is, a point-in-time statistical model of incurred loss. Similarly incurred but not reported (IBNR)/general provisions are usually set using collective models for the whole portfolio. Therefore in order to verify that provisioning levels are appropriate it is critical to ensure that collective provisioning models are fully aligned with the letter and spirit of accounting rules (IAS 39 or nGAAP). What is proposed in this document is entirely consistent with these rules to ensure alignment with accounting processes and standards. *This analysis will run from mid-March to early July*

8. **Level 3 fair value exposures review:** For banks with material level 3 exposures, a thorough revaluation of the most important exposures will be carried out on a selective basis – i.e. not all banks will be analysed. For banks with material level 3 non-derivative exposure, a revaluation of the most important securities will be carried out. For the banks with the most important trading books (as defined in Phase 1 methodology), a qualitative review of trading book core processes (e.g. Independent Price Verification (IPV), product approval, etc.) will be carried out, combined with a quantitative review of the most important derivative pricing models (measured based on metrics such as level 3 gross mark-to-market) from a level 3 perspective. It is expected that fewer than 10 derivative pricing models will be reviewed for each bank included in the trading book review, depending on the size of the bank's exposure to level 3 derivatives. Some banks included in the trading book review will have no relevant level 3 derivative pricing models to review. *The level 3 asset and trading book review will be carried out between early March and the early July.*

9. **Determine AQR-adjusted CET1% for use in the stress test and define remediation activities for banks following CA:** No change in the 2013 certified accounts of banks will be required (except in the unlikely event the AQR highlights issues that should lead to restatement according to local law e.g. identification of accounting irregularities).[2]

Certain findings from the AQR should be expected to be reflected in bank's accounts in the relevant accounting period in 2014 following the AQR.[3] These may include:

- Corrections to specific provisions for individually impaired credit facilities that were sampled in the file review;
- Corrections to specific provisions for collectively impaired credit facilities, where the bank's collective provisioning model is viewed by the NCA Bank team as missing crucial aspects required in accounting rules (e.g.. discounting based on EIR). This would be expected to be dealt with by the bank correcting internal models and policies (rather than mechanistically requiring the bank to apply the challenger model instead);
- Creation of a credit valuation adjustment (CVA) for derivatives.

Other findings from the AQR will not be included in 2014 accounts, as they are not explicitly compliant with accounting rules (e.g. they do not relate to incurred losses) and as such NCAs will not be in the position to require banks to accept them. For instance:

- The extrapolation of findings from sampled files to the wider portfolio;
- There is no prescription in the accounting rules around emergence period for IBNR/general provisions. Even if banks do not produce objective evidence for their choice of emergence period, they still may not be required to use a more conservative emergence period;
- Banks may reject third party or NCA valuations of level 3 securities.

In order to correctly account for all incurred losses and IRB expected losses, an "AQR-adjusted CET1%" will be calculated for each bank. This AQR-adjusted CET1% (which calculated according to the Single Rule book of January 1 2014) will be used to compute the final stress test outcomes. The **bank would not be required to restate accounts or apply the AQR assumptions on an on-going basis, i.e. the AQR-adjusted CET1% is not a de-facto alternative accounting standard.** *Banks' breakdowns of the CET1% will be delivered and checked during April, May, and June. The AQR adjustment calculation will be carried out during July*

---

2 For IFRS banks, IAS8 applies.

3 There is a possibility that some P&L adjustments that will be recognised as a result of the AQR are already booked in interim financial statements before completion of the comprehensive assessment - this will have to be factored into the final communication of the results with the banks and to the market.

10. **Quality assurance:** a four eyes principle should be applied by NCA bank teams to ensure the quality of the exercise at a national level. This national level "Quality Assurance" will not be led by the ECB. The ECB will focus on ensuring cross-system consistency and a level playing field between systems at the end of the comprehensive assessment process. Some flexibility will be allowed in terms of the specific operating model that is applied by NCAs for national QA – this will be discussed and agreed by the CPMO with the NCA on a case by case basis. *QA will be carried out throughout the process*

d AQR supporting tools

The AQR will require several types of tools to supplement this Manual. They can be divided into three categories, and be specific to a particular workblock of the AQR:

- **Illustrative models and parameter sheets:** these will be provided to provide guidance on specific calculations required during the AQR;
- **Templates:** these will collect information for QA purposes and be provided for population by the NCA bank team during the review;
- **Output reports:** these will be produced by the NCA bank team, and used to deliver the final results to the CPMO and/or banks.

i Illustrative models and parameter sheets

A series of illustrative models and parameters worksheets are provided with this Manual or will be provided. The models and parameters are aligned with the workblocks described above and are described in more detail below.

Table 1 Illustrative models and parameter sheets		
Subject	**Relevant Manual Chapter**	**Illustrative model/parameter sheet**
Probability of impairment (PI)	7. Collective provisioning	Step-by-step example calculation of PI with parameters and definitions *'PI illustration.xls'*
Cure rate (CR)	7. Collective provisioning	Step-by-step example calculation of CR with parameters and definitions *'CR illustration.xls'*
Loss given loss – retail mortgage	7. Collective provisioning	Step-by-step example calculation of LGL for retail mortgages with parameters and definitions *'LGL illustration – retail mortgage.xls'*
Loss given loss – credit cards	7. Collective provisioning	Step-by-step example calculation of LGL for credit cards with parameters and definitions *'LGL illustration – retail other.xls'*
Loss given impairment - corporate	7. Collective provisioning	Step-by-step example calculation of LGI for corporates with parameters and definitions *'LGI illustration.xls'*
Sampling error simulation example	3. Sampling	Step-by-step example of simulated errors from sampling process *'Sample example.xls'*
Projection of findings	6. Projection of findings of credit file review	Step-by-step example of projection process on results of AQR *'Projection of findings example.xls'*
Sampling rates	3. Sampling	Parameter sheet for determining sampling rates for each stratum in a portfolio *'Sample rates.xls'*
Collateral and other macro indices	4. Credit file review and 7. Collective provisioning	Parameter sheet for collateral indices and other macro indices

ii Templates

The CPMO will provide a series of templates to support NCA bank teams in carrying out the AQR. In some cases the templates will be submitted at regular intervals to CPMO to provide an update on progress.

Note: PMO related templates are not covered in this document. For information on this topic please refer to the CPMO.

Table 2 Templates			
Workblock	**Template**	**Summary of contents**	**Frequency of submission to CPMO**
1. Processes, policies and accounting review (PP&A review)	T1. Processes, policies and accounting review assessment template	Questionnaire covering the questions defined for the Processes and Policies review Either codified answers are provided for each question and/or space for free text answers is provided Will include a simple CVA challenger model Results from CVA challenger calculation are used in the AQR-adjusted CET1% ratio template	At end of PP&A process
2. Loan tape creation and DIV	T2A. Loan tape and other data dictionary	Provides dictionary for all fields required in the loan tape Acts as a checklist for NCA bank teams to ensure banks have provided all data required	Not required to be submitted
	T2B. DIV monitoring template	Red/Amber/Green assessment template for each check prescribed for DIV for each field/combination of fields	Weekly update of work in progress template provided
3. Sampling	T3. Sampling rates template	Tool to determine sampling rates for each portfolio for each stratum	Interim update 2 weeks into DIV Final update 2 days after completion of DIV
4. Credit file review	T4A. Credit file review data preparation template	Template for banks to complete with key information on individual debtors[4] that have been sampled (to streamline file analysis process for NCA bank teams)	Not required to be submitted
	T4B. Credit file review findings template	Template capturing findings from credit file review for each debtor	Weekly submission of WIP template
5. Collateral and real estate valuation	T5. Collateral and real estate valuation template	Template to capture information around collateral revaluations	Weekly submission of WIP template
6. Projection of findings of credit file review	T6. Projection of findings tool	Tool that takes results of credit file review findings and projects findings for the unsampled exposure for the relevant portfolio Results from template are used in the AQR-adjusted CET1% ratio template	At end of task

[4] Debtor defines as per EBA ITS guidelines

Table 2 Templates			
7. Collective provision analysis	T7. Collective provisioning results template	Template to compare results of challenger model with bank's provisions Results from template are used in the AQR-adjusted CET1% ratio template	Two versions to be submitted: 1) results based on analysis of loan tape with no adjustment for credit file review; 2) Results with adjustment for credit file review
8. Level 3 fair value exposures review	T8A. Revaluation of non-derivative level 3 assets findings template	Template to present results of revaluation of non-derivative level 3 assets Results from template are used in the AQR-adjusted CET1% ratio template	Once complete
	T8B. Core trading book processes review findings template	Template containing questionnaire for core process review Includes codified definitions for Red Amber Green assessment of each element of the review	Once complete
	T8C. Level 3 derivative pricing model review findings template	Template containing questionnaire for core process review Includes codified definitions for Red Amber Green assessment of each element of the review Also captures quantitative adjustments for all in scope pricing models	Interim update provided once questionnaire is Complete, then fortnightly
9. AQR-adjusted CET1% ratio	T9. AQR-adjusted CET1% adjustment tool	Tool to adjust bank CET1% ratios based on results of AQR	At end of task

iii Output reports

NCA bank team will need to produce a series of final outputs at the completion of each workblock. In some cases this involves providing a final version of the template described above. In other cases it involves a PowerPoint presentation of key issues being produced. In the latter case, example PowerPoint structures will be provided before commencement of Phase 2.

Table 3 Outputs required from NCA bank teams for the AQR	
Workblock	**Output**
1. Processes, policies and accounting review (PP&A review)	Complete T1. Processes, policies and accounting review assessment template O1B. PowerPoint presentation on all remediation activities required to be undertaken by the bank as a consequence of the PP&A review following the CA
2. Loan tape creation and DIV	Complete T2B. DIV monitoring template O2B PowerPoint presentation describing any remedial action the bank should take as a result of DIV
3. Sampling	Complete T3. Sampling rates template
4. Credit file review	Complete T4B. Credit file review findings template O4B PowerPoint presentation describing any remedial action the bank should take as a result of Credit File review
5. Collateral and real estate valuation	Complete T5. Collateral and real estate valuation template
6. Projection of findings of credit file review	Complete T6. Projection of findings tool
7. Collective provision analysis	Complete T7. Collective provisioning results template O7B PowerPoint presentation describing any remedial action the bank should take as a result of Collective provision analysis
8. Level 3 fair value exposures review	Complete T8A. Revaluation of non-derivative level 3 assets findings template Complete T8B. Core trading book processes review findings template Complete T8C. Level 3 derivative pricing model review findings template O8D PowerPoint presentation describing any remedial action the bank should take as a result of level 3 fair value exposures review
9. AQR-adjusted CET1% ratio	Complete T9. AQR-adjusted CET1% calculation tool O9B Draft letter to bank outlining actions that should be taken as a consequence of the AQR (referencing output O1B, O2B, O3B, O4B, O7B, O8D)

iv Technical assistance and discussion on Phase 2 methodology

The ECB will be providing a central Quality Assurance and Technical Assistance Team, which will in part provide technical assistance via a "help-desk" structure similar to that provided during Phase 1:

- NCAs will be able to submit their questions, in a consolidated manner (max. one email per day), to a dedicated mailbox: helpdesk.compass.NCA@ecb.europa.eu;
- ECB will review questions and draft a response for inclusion in next issuance of frequently-asked questions (FAQs);
- FAQs will be circulated to all NCAs on a regular basis (typically twice per week);

- Weekly calls will be held to address common questions for the group in an interactive manner;
- NCAs circulate FAQ responses to relevant parties (banks/auditors/appraisers);

e Timelines

Indicative timelines are provided in each section of the Manual. It should be emphasised that these are indicative and specifically that NCA bank teams may start/complete each process before these timelines and are encouraged to do so in order to best assure delivery of the overall project on time.

Note that shaded bold indicative dates are hard milestones that have been communicated to NCAs elsewhere.

1 PROCESSES, POLICIES AND ACCOUNTING REVIEW

This Chapter provides the detailed instructions required by the NCA bank team to carry out the processes, policies and accounting (PP&A) review component of Phase 2, the initial assessment component of which is scheduled for completion during a six-week period from 17 February 2014. The PP&A review is centred on ensuring that the bank has a robust set of clearly defined policies and processes for the correct interpretation of accounting rules, or other appropriate industry standards, in areas where any issues identified would be most likely to result in a misstatement of the balance sheet value, or have a material impact on the AQR results. Broadly, this review includes the classification of exposures for measurement under Amortised Cost (Cost), Fair Value (including the application of the IFRS fair value hierarchy) or Equity Method, and other policies regarding the bank's internal policies and definitions relating to NPEs, forbearance, collateral valuation, provisioning and application of CVA to derivative holdings. Any issues identified will require remediation, either as part of Phase 2 or as soon as possible after the conclusion of the AQR.

There may be quantitative outcomes from the PP&A review that directly impact on the determination of AQR-adjusted CET1%: amendments to carrying amounts due to reclassification of exposures from Amortised Cost to Fair Value, as well as the results from the challenger model analysis of accounting credit valuation/debt valuation adjustments (CVA/DVA).

1.1 SUMMARY OF APPROACH

- The PP&A review is focused on the bank processes and polices, in particular those related to key accounting decisions;
- Each section of the review will be designed to perform an assessment of bank practices against either relevant accounting standards[5] or objective criteria provided by the CPMO. The specific thematic areas to be addressed within the questionnaire template are:

1. **Classification of financial instruments**: the classification and measurement of financial assets into Amortized Cost vs. Fair Value as per IAS 39 as well as treatment of equity positions, hedge accounting & derecognition;

[5] IFRS or nGAAP as applicable.

2. **Application of fair value hierarchy**: the classification of valuation inputs and corresponding exposures into the Levels of the IFRS 13 fair value hierarchy, where level 3 exposures are those for which valuation is based on unobservable model input parameters;
3. **Non-Performing Exposures (NPE) definitions**: the definition of "Non-performing" relative to the EBA simplified approach for the AQR, including treatment of forborne assets;
4. **Forbearance and restructuring**: the restructuring policy, definition, identification and tracking of forborne assets, including the implication on provisioning;
5. **Provisioning processes and policies**: the definition of "impaired", appropriateness of impairment triggers, and policies and processes regarding the calculation of provisions;
6. **Collateral valuation and disposal processes**: the processes regarding collateral valuation across collateral types and conservativeness of written policies;
7. **Credit valuation adjustment calculation**: the existence and coverage of the bank's calculation of a credit valuation adjustment for derivatives;
8. **Groups of connected clients and country of the ultimate borrower**: the processes in place to identify connected clients, and determine the ultimate borrower's country of risk.
9. **Deconsolidation processes**: the processes in place to decide when assets should be deconsolidated from the balance sheet
10. **Reserves for legal costs**: the approach the bank takes to defining reserves for litigation etc.

- The PP&A review will be coordinated and conducted by NCA bank teams, however the review will also incorporate a preliminary self-assessment element to allow the NCA bank team to understand how the bank sees its own issues. The PP&A review may be performed in any combination of self-review and NCA bank team review the NCA deems the most appropriate. In some (clearly indicated) cases Bank responses are not to be amended by NCA bank teams;
- As a means for aggregate assessment of thematic areas, at the end of each section of the PP&A review both the Bank and NCA bank team will score the relevant practices of the Bank (e.g. application of the IFRS 13 Fair Value Hierarchy), making use of the following 5-point scale:

5-point scale	
Assessment	**Guide**
1: Poor practice in many areas or with some outside accounting principles	Bank has more than one deviation from accounting principles in this area Bank has more than five aspects of policies, processes or accounting relating to this area of the PP&A review that are considered below typical market standards
2: Poor practice in many areas or with any outside accounting principles	Bank has one deviation from accounting principles in this area Bank has more than three aspects of policies, processes or accounting relating to this area of the PP&A review that are considered below typical market standards
3: Within accounting principles and poor practice in some areas	Bank has more than one aspect of policies, processes or accounting relating to this area of the PP&A review that are considered below typical market standards
4: Within accounting principles and good practice in most areas	Bank has one aspect of policies, processes or accounting relating to this area of the PP&A review that are considered below typical market standards
5: Within accounting principles and good practice in all areas	Otherwise

- Both Banks and NCA bank teams will also be asked to identify any issues or areas of interest within each section of the PP&A review that required further investigation;
- The output of the review will be a set of completed questionnaire responses that has been reviewed in full by the NCA bank team together with accompanying rationale and supporting evidence wherever appropriate, as well as a set of resulting remedial actions;
- The processes, policies and accounting review will be filled out for the significant bank at the consolidated level, or at the level of the entity that is subject to the AQR (if below the consolidated level). Additionally, and at the NCA's discretion, further templates may be submitted focusing on subsidiaries, if the nature of the bank and its divergent performance across entities is felt to justify it. However, it is expected that such circumstances are discussed with the CPMO prior to submission of the review and these are expected to be rare;
- Subsidiaries for which no portfolios have been selected within Phase 1 of the AQR should not be considered in the answers to the PP&A review;
- Banks should provide supporting documentation to aid NCA bank team completion of the review, though no supporting documentation is required alongside submission of the PP&A template to the CPMO;
- Accordingly, a space has been provided at the top of each section of the template in which the significant bank should detail relevant supporting documentation for that section;

- Following completion of the PP&A review, as part of the remediation period, all significant banks in scope of the AQR are required to complete the CVA challenger model (please see 1.6);
- There will be a direct quantitative impact on the AQR-adjusted CET1% calculation (see Section 9) for those banks which do not appropriately calculate CVA, and there may also be a quantitative impact in the case that banks are required to reclassify assets (e.g. from measurement at Amortised Cost to Fair Value).

1.2 INDICATIVE TIMELINE

Table 4 Indicative timeline for PP&A review

Task	Indicative date[6]
NCA bank teams commence reviews	17 February 2014
Bank completes self-assessment	28 February 2014
The CPMO receives final results	**28 March 2014**

1.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 5 Models, parameters and templates for PP&A review

Template	Summary of contents	Frequency of submission to CPMO
T1 - Processes, policies and accounting review assessment template	• Questionnaire covering the questions defined for the Processes and Policies review • Codified answers are provided for most questions with space for free text answers and accompanying rationale where required	At end of PP&A process

Note that some of the areas of the review will not be relevant for nGAAP banks (e.g. for some areas of the classification of financial assets and the fair value hierarchy). For these banks, the relevant questions should be interpreted in terms of equivalent nGAAP standards where possible, or ignored in the absence of a suitable comparison. If a question is ignored the NCA bank team should state clearly why it is not relevant.

[6] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones.

Also note that allowances have also been made for the bank to indicate and elaborate upon instances where the results of particular sections of the PP&A differ markedly by subsidiary (beneath the SSM consolidated level) and as such have affected the results of the review.

The remainder of this section is structured as:

- Areas in scope for review;
- Objective scoring for each question;
- Outputs.

1.4 AREAS IN SCOPE FOR REVIEW

The areas that will be covered as part of the review are:

1. Classification of financial instruments
2. Application of fair value hierarchy
3. Non-Performing Exposures (NPE) definitions
4. Forbearance and restructuring
5. Provisioning
6. Collateral valuation and disposal processes
7. Credit valuation adjustment (CVA) calculation
8. Groups of connected clients and country of ultimate borrower;
9. Deconsolidation processes; and
10. Reserving for legal costs.

These are discussed in turn below.

1.4.1 CLASSIFICATION OF FINANCIAL INSTRUMENTS

The classification of financial instruments is included in this review as any misclassifications may have a material impact on the balance sheet or P&L. For example, if any assets are incorrectly held at HTM, but identified as being required to be accounted for at Fair Value then this may result in a misstatement of the CET1%. In the main, this section of the PP&A review references IAS 39 accounting criteria for recognition and measurement of financial instruments and IAS 28 guidelines for investments in associates. The areas for investigation are detailed below.

- Policy for classifying financial assets as per IAS 39 financial instrument classifications and resulting measurement (e.g. Fair Value vs. Amortised Cost);
- Within Fair Value, policy for classifying assets as AFS (rather than held-to-maturity or loans and receivables) , in particular regarding:
  - Any announcements/commitments to the market or to third parties around sale of assets (note that tainting is not an issue for assets classified as loans and receivables);
  - Any assets where there is an internal strategy to sell run down or sell assets over time (e.g. classified as "legacy", "non-core" or similar);
  - The liquidity portfolio as defined by assets held by the bank for the purposes of liquidity metrics (with exception of assets that cannot be sold according to contractual terms e.g. SAREB bonds).
- Treatment of derivatives (including embedded derivatives) at Fair Value in the banking book
- Bank designation of assets for hedging purposes and associated hedge accounting policies and procedures
- Treatment of material equity positions entered into as a result of debt restructuring;
- Use of the "equity method" for valuing any material equity positions, and any policies in place for identifying whether the bank has "significant influence"7
- Bank practices for valuation of central bank equity positions
- Example and accompanying rationale for recent examples of derecognition of financial assets

Within this section of the PP&A review significant banks' approach to the accounting for Credit Default Swaps will also be examined. Under IFRS, Credit Default Swaps (CDS) meet the definition of a financial derivative, and unless designated in an effective hedging relationship (what is under IAS 39 extremely difficult for an instrument like CDS), need to be accounted at fair value through profit or loss. Normally, under IFRS a CDS does not meet the definition of a financial guarantee contract in paragraph 9 of IAS 39 as in a standardised CDS contract the credit events triggering the payout may not directly relate to the failure to pay on that particular debt instrument (e.g. an entity can hold a naked position and the definition of credit events in a standardised CDS is broader than a failure to pay).

The output of the review will include remedial actions wherever issues are identified in order to bring the Bank in-line with accounting standards during the AQR[8]. Any quantitative impact on

[7] See IAS 28(2011).6

[8] Any reclassifications required should be prioritised based on expected impact on available capital.

available capital (e.g. as a result of reclassification of a group of assets to fair value accounting) will be calculated and disclosed as a part of the remediation process that follows the review.

1.4.2 APPLICATION OF FAIR VALUE HIERARCHY

The application of the IFRS 13 fair value hierarchy is included in this review as any issues identified may have a material impact on the output of the level 3 fair value exposures review (see Chapter 8). For example, if a material portfolio of securitisations has been incorrectly classified as Level 2, instead of level 3, these should be included as in-scope for the level 3 non-derivative asset revaluation (see Section 8.2), which may result in a larger impact on the AQR-adjusted CET1% calculation (see Section 9.5). The areas for investigation are as follows:

- Appropriateness of policies for the classification of assets into the IFRS 13 fair value hierarchy levels for each asset type;
- Spot checks of positions classified as Level 1 and Level 2;
- Investigation of any assets currently classified as Level 1 and Level 2 which are included in a specific list of product types *often* expected to be level 3 (e.g. illiquid or complex derivatives[9], private placements, bespoke securitisations etc.) – a list of these cash and derivative products is provided, for each of which the Bank must indicate if any such assets are classified at Level 1 or Level 2 and the NCA bank team must indicate if they agree with the classification choice

The output of this section of the review may include additional remedial actions to bring the Bank in line with accounting standards.

In addition, where the review may identify additional level 3 fair valued assets not originally included in the Phase 1 Template, the NCA bank team will be required to re-check materiality thresholds for inclusion of each asset type into the level 3 revaluation for non-derivative assets (see Section 8.2.4) as part of the AQR. This should be done based on the new combined total level 3 exposure values (both original and newly identified during the PP&A review).

1.4.3 NON-PERFORMING EXPOSURE DEFINITIONS

The bank's internal definition of non-performing exposures is included in this review as any issues identified may have a material impact on the sampling (see Section 3) process used for the credit file review (see Section 4.4). For example, if the NPE definition includes all forborne loans, then the stratified sampling approach may require adjustment to reflect this. The areas for investigation are as follows:

[9] For example, power reverse dual currency notes and equity basket quantos with single name underlyings.

- Definition of Non-performing as compared to EBA simplified approach for the AQR[10];
- Identification of any additional, more conservative elements to the bank's internal NPE definition;
- Confirmation that the bank measures "days past due" as per Capital Requirements Regulation (CRR) requirements.

1.4.4 FORBEARANCE AND RESTRUCTURING

The treatment of forbearance and restructuring is included in this review as any issues identified may have a material impact on the sampling (see Section 3) process used for the credit file review (see Section 4.4) and the identification of misstatement in the credit file review itself. For example, if the Forbearance and Restructuring review highlights aggressive use of interest only concessions as a means of limiting past due, the NCA bank teams should be particularly mindful of this fact when assessing individual files for loss events relating to concessions. Further, PP&A review of bank forbearance policies provides an additional layer of scrutiny to the DIV assessment (2.6) of forbearance flagging in the loan tape, which constitutes a direct input to the sampling model (3.5).

The areas for investigation are as follows:

- Bank policies for identification and definition of forborne loans as per EBA Implementing Technical Standards (ITS) guidelines;
- Management Information regarding forborne assets, including details of forbearance approaches offered, associated rationale and acceptance;
- Policies for restructuring of distressed exposures for each segment, including: range of treatments; prioritisation of treatments; and impact on provisioning (e.g. when would the bank not classify a loan as impaired at the point of forbearance?);
- Difference in approach for performing vs. non-performing credits for each segment;
- Ensuring the policies the bank applies to deconsolidating exposures following loan restructuring is appropriate and does not lead to inappropriate "re-ageing" of past due.

The output of the review may also include remedial actions to bank processes around forbearance and restructuring – in particular in relation to identification and reporting of forborne loans, to be completed following the CA.

[10] See Section 2.4.4.

1.4.5 PROVISIONING

Provisioning approaches are reviewed so that, ex-ante, particular areas of misalignment or aggressive interpretation of accounting rules are identified. This will clearly have a bearing on expectations of misstatement relative to the AQR's minimum standards.

The areas for investigation are as follows:

- Use of impairment triggers by internal client segments, (i.e. residential real estate (RRE), other retail, commercial real estate (CRE), other asset finance (e.g. shipping), small and medium enterprises (SME));
- Bank policies and practices for monitoring of client performance (e.g. types of covenant, behavioural analysis etc.) by internal client segment
- Range of haircuts and assumptions applied by the bank to market value of collateral when setting provision levels for collateralised loans
- Provisioning practices under special circumstances (e.g. where the bank holds multiple tranches of the debtor's capital structure etc.)
- Suitability of bank write off approaches;
- Bank treatment and definition of cured assets for provisioning purposes, including forbearance considerations;
- Appropriateness of use of collective provisioning methodology;
- Bank application of an emergence period for IBNR calculation;

The output of the review may also include remedial actions, including requiring banks to adjust policies to bring provisioning practices into line with accounting rules, following the CA.

1.4.6 COLLATERAL VALUATION AND DISPOSAL

Similarly to provisioning, in order to anticipate findings from the credit file review and collective provisioning processes, the bank's collateral valuation approach should be assessed and understood. This will provide NCA bank teams with the context to understand the potential for over estimation of recoveries for provisioning purposes.

The areas for investigation are as follows:

- Use of consensual vs. non-consensual foreclosure (historic and forward looking);
- Collateral valuation processes by collateral type (CRE, RRE, shipping etc.) including:
  - Frequency of collateral revaluation (incl. indicator of number of loans overdue for appraisal)

- Type of valuation (e.g. market value, long term economic value, replacement value, DCF etc.)
- Bank adjustments to collateral valuations through use of index price movements
- Priority of channel for disposal (e.g. auction, direct sale, sale through third party etc.)
- Expected and historical time to sale (from default to point of disposal)

- Prudence of collateral valuation yield assumptions by region, primary/secondary, urban/rural and use

The output of the review may include remedial actions, relating to changes to collateral valuation policies (e.g. use of external appraiser valuation, approach to considering hope value), following the CA.

1.4.7 CREDIT VALUATION ADJUSTMENT CALCULATION

The existence of a calculation of CVA for the derivative portfolio is included in this review as any issues identified will have a direct impact on AQR-adjusted CET1%. For example, if the bank does not currently calculate CVA then a simplified approach to calculating CVA will be used, where the result will be directly deduced from available capital as part of the AQR-adjusted CET1% calculation[11] (see Section 9.5). The areas for investigation are as follows:

- Existence of CVA (and DVA) calculation methodology for accounting purposes;
- Appropriate use of PD, LGD and exposure parameters for CVA calculation purposes;
- Portfolio coverage of the calculation (i.e. any material exclusions) by counterparty type (internal, monoline etc.) and collateralised/non-collateralised split (including considerations for any materiality thresholds in place)
- Determination of appropriateness of application and scope of bank CVA practices, indicating whether the bank is required to use the CVA challenger model as part of the remediation process

The output of the review may include remedial actions (please see Section 9.6), as well as a direct quantitative impact into the AQR-adjusted CET1% calculation. Further, if it is indicated as a requirement in the PP&A template, the bank will complete the CVA challenger model to determine a quantitative impact.

The challenger model, distributed separately from the PP&A template, will determine the quantitative impact using an approximation of CVA based on the following:

[11] Note debt valuation adjustment (DVA) gains are not included in AQR-adjusted CET1% (see CRR Article 33 paragraph 1 (c))

- Bank internal exposure projections where they exist and Basel EAD for derivatives where they do not (where no CVA is currently calculated[12]);
- Market implied PDs[13] by rating and maturity;
- LGD benchmarks (consistent with market implied PDs).

This calculation will be performed outside of the PP&A Template during the remediation period that follows the review, with the results taken as an input into the AQR-adjusted CET1% Calculation Template (see Section 9.5).

The timelines for completing the challenger model are extended relative to the rest of the PP&A. It is envisaged the challenger model will be populated between April 1 and May 30. This may necessitate an adjustment to the PP&A template once the challenger model is completed

1.4.8 GROUPS OF CONNECTED CLIENTS AND COUNTRY OF ULTIMATE BORROWER

The bank's understanding of its groups of connected clients and the classification of country of ultimate borrower are included in this review as any issues identified will have a direct impact of the credit file review. For example, any misclassifications of country of risk for any borrower would result in a restatement of the Phase 1 template, and the incorrect treatment of two connected clients may lead to the double counting of collateral (e.g. in the case of second lien mortgages). Further, the sampling process for the credit file review relies on identification of debtors connected to those selected in the initial sample. The areas for investigation are as follows:

- Methodology and systems capabilities for producing debtor level view of portfolio for non-retail clients, including links outside of consolidated legal entities;
- Approach to considering links created by cross collateralisation.
- Bank policy for identification of a connection between clients, as per CRR requirements, including consideration of:
  - Direct or indirect control by one client over the other
  - Material economic dependency between clients
- Methodology for identification of country of ultimate borrower (including consideration of enforceability across the connected group);

[12] If this cannot be broken down adequately, then a CVA approximation will be calculated for the full derivative portfolio and any existing CVA as calculated by the bank will be deducted.

[13] Consistent with IFRS13 guidance around need for market consistent parameters and other guidelines from IASB.

The output of the review may include remedial actions to the loan tape (see Section 2.6).

1.4.9 DECONSOLIDATION PROCESSES

Ensuring the processes the bank applies to deconsolidation are in line with IFRS 10 (or nGAAP equivalent) accounting standards is important as these processes determine the size and composition of the SSM consolidated entity at which significant banks report for the purposes of the AQR. Areas for investigation are as follows:

- Bank determination of whether it controls (as per IFRS 10) another entity
- Previous examples of material deconsolidations of assets by the bank, with accompanying circumstances, size and rationale for deconsolidation
- Specific assessment of bank policies around deconsolidation of complex structured transactions such as treatment of securitisation SPEs meet accounting rules

For the avoidance of doubt – banks are not expected to have complied with IFRS 10 prior to it being implemented, however it is relevant to understand how the bank's deconsolidation policies compare to IFRS 10.

1.4.10 RESERVING FOR LEGAL COSTS

Future costs relating to litigation are extremely material for many banks and can have a significant bearing on available capital. A high level check on the processes the bank has in place to size litigation reserves will be carried out to ensure suitability of bank treatment of such costs including:

- Bank policy for sizing litigation provisions (including example cases and associated drivers use for sizing provisions)
- Frequency of review of reported provisions related to litigation costs

1.5 OBJECTIVE ASSESSMENT FOR EACH QUESTION

For each question in the PP&A Template, guidance will be provided for the NCA bank team to be able to make an objective assessment of the bank. In most cases questions will be worded to ensure consistency with accounting principles, though questions may include further prescription in the form of ECB thresholds for prudential purposes, as described in the introduction. An example of this objective scoring for Provisioning polices and processes is shown below:

Worked Example: Impairment triggers

Question: What impairment triggers does the bank use?

Expected response: The bank uses the following triggers (Yes or No):

Table 6 Example of objective assessment for PP&A review

Client segment	Triggers
Retail Mortgage	A loan/asset is more than 90 days past due (above materiality threshold) A loan/asset is more than 120 days past due (above materiality threshold) A loan/asset is more than 180 days past due (above materiality threshold) A request for a forbearance measure from the debtor (as defined in EBA ITS guidelines) A request for a forbearance measure from the debtor (where forbearance is defined as financial distress coupled with an improvement in terms for the customer) Customer has another product which is classed as impaired Customer has another product which has an impairment trigger A material decrease in rents received on a buy-to-let property No rents being received on a buy-to-let property
Retail other	A loan/asset is more than 90 days past due (above materiality threshold) A loan/asset is more than 120 days past due (above materiality threshold) A loan/asset is more than 180 days past due (above materiality threshold) Customer has another product which is classed as impaired Customer has another product which has an impairment trigger A request for a forbearance measure from the debtor (as defined in EBA ITS guidelines) A request for a forbearance measure from the debtor (where forbearance is defined as financial distress coupled with an improvement in terms for the customer)
Commercial real estate (CRE) or other asset finance (e.g. shipping)	A loan/asset is more than 90 days past due (above materiality threshold) A loan/asset is more than 120 days past due (above materiality threshold) A loan/asset is more than 180 days past due (above materiality threshold) A request for a forbearance measure from the debtor (as defined in EBA ITS guidelines) A request for a forbearance measure from the debtor (where forbearance is defined as financial distress coupled with an improvement in terms for the customer) A material decrease in the property value A material decrease in estimated future cash flows The lack of an active market for the assets concerned The absence of a market for refinancing options A significant decline in the Institution's credit rating of the debtor
Small and medium enterprises (SME) portfolio triggers	A loan/asset is more than 90 days past due (above materiality threshold) A loan/asset is more than 120 days past due (above materiality threshold) A loan/asset is more than 180 days past due (above materiality threshold) A request for a forbearance measure from the debtor (as defined in EBA ITS guidelines) A request for a forbearance measure from the debtor (where forbearance is defined as financial distress coupled with an improvement in terms for the customer) Trading losses Diversion of cash flows from earning assets to support non-earning assets A material decrease in turnover or the loss of a major customer A default or breach of contract A significant decline in the Institution's credit rating of the debtor

- Example steps taken by the Bank and NCA bank team:

1. Bank reviews own impairment trigger documentation and provides preliminary answers to be reviewed by NCA bank team
2. NCA bank team requests impairment trigger documentation from the bank;
3. For each trigger listed, NCA bank team determines if trigger (implicitly or explicitly) is included within bank policy;
4. NCA bank team amends bank response in PP&A Template if required and adds rationale for response, highlighting sources used and consideration of proportionality given specifics of the market (e.g. impairment trigger may not be considered because it would imply an inappropriate number of exposures would be triggered)

1.6 CVA CHALLENGER MODEL

All significant banks within the scope of the AQR are required to complete the CVA challenger model. This will involve providing: Accounting CVA exposure profiles to the extent that they exist and counterparty credit risk Basel EADs for where a CVA calculation is not currently implemented. The CVA challenger model then calculates an estimate of the CVA based on Benchmark PD parameters estimated from current index CDS curves and a market standard LGD parameter. The source of any significant deviations should then be understood.

Clearly if the bank does not calculate CVA for a part of the derivative portfolio we would expect an obvious deviation when Basel EADs are applied. Using Basel EADs will be definition be conservative, therefore in these circumstances, bank's will be allowed time following the PP&A to provide CVA exposure profiles for trades not initially included in the exposure profile. For the avoidance of doubt - It is not acceptable to assume the CVA for a collateralised exposure is 0.

1.7 OUTPUTS

The findings from the analysis will be used in three ways:

- To provide information to the NCA bank teams to help guide the analysis throughout the remaining workblocks
- To identify quantitative adjustments that should be included in the stress test in relation to portfolios that should not be held at amortised cost and outcome of the CVA challenger model analysis

- To specify remediation actions that banks should make to policies and processes for issues that are out of line with accounting principles

The following specific outputs will need to be produced for this workblock:

Table 7 Outputs for PP&A review

Workblock	Output
1. Processes, policies and accounting review (PP&A review)	• Complete T1. Processes, policies and accounting review assessment template • O1B PowerPoint presentation on all remediation activities required to be undertaken by the bank as a consequence of the PP&A review following the CA • CVA challenger model results, and established impact for CET1% calculation

2 LOAN TAPE CREATION AND DATA INTEGRITY VALIDATION

This chapter explains the analysis required to perform data integrity validation (DIV) and to decide on the remediation steps required as a result of findings. Following the executive summary and indicative timeline, it describes the contents of the core dataset for the DIV, the "loan tape", and discusses the key definitions used for the AQR – most particularly the EBA simplified approach NPE definition. It then goes on to describe the different types of DIV analysis that should be performed and the remediation actions that could be taken, depending on the findings from the DIV. Finally, the shape of the final report on DIV is discussed (including the incorporation of findings from the credit file review discussed in later sections).

2.1 SUMMARY OF THE APPROACH

- A critical part of the AQR exercise is improving the transparency of bank balance sheets. To achieve this, it must be ensured that the data Banks provide for use in the CA is of sufficient quality around key issues such as exposure segmentation and missing information. Furthermore, any analysis to be performed concerning potential capital shortfalls and stress testing is predicated on a thorough understanding of the data issues. As a result, a thorough DIV approach is required.
- Loan tapes will be created by banks, covering data fields specified by the ECB. Automated checks are performed on the loan tape, first by banks (for basic transposition errors) and then by NCA bank teams (for internal consistency checks). Automated checks include:
  - Reconciliation checks (i.e. validating bank's automated checks confirming that the loan tape is consistent with source systems);
  - Field-specific checks (identify errors e.g. missing values; inappropriate values; incorrect formats; duplicate values, etc.);
  - Cross-field checks (checks for inconsistency between fields e.g. credit > 90 days past due but no NPE flag; industry code consistent with segment definition, etc.);
  - Sense-check of distribution of observations (e.g. retail mortgage exposure evenly distributed across LTV buckets with no exposure above 200% LTV; no "retail other" exposures > EUR 1,000,000, etc.);
  - Cross-time checks (e.g. loan that is > 90 days past due in Dec 2012 should not be flagged as "never been NPE" in Dec 2013).
- During loan tape creation NCA bank teams are advised to prepare the necessary scripts for DIV;

- The DIV process should be a "straight line" process that is executed within the time allowed. It should not result in continual reiteration of loan tape data. Instead, appropriately conservative remediation strategies should be applied to avoid the need for delays in the process while data is corrected;
- Some semi-automated checks should also be performed, these require some level of interaction with staff in the significant bank;
- Check with the Bank validity of top 20/bottom 20 values of exposure fields; and
- Check with the Bank validity of any repeat entries of collateral value fields.
- A Red/Amber/Green assessment or equivalent will be applied by the NCA bank team (according to specification by the ECB) for each check, and a report will be provided to the NCA and copied to the CPMO.
- Findings from the credit file review that have a bearing on DIV will also be an important element of the overall DIV assessment. Most specifically, the classification of credit exposures by AQR asset segment (i.e. aviation versus Large corporates (non real estate)) and impairment status (i.e. impaired versus not impaired) can only be fully checked by comparing the specifics of the case (described in credit files) with the loan tape. The associated analysis of this element of the DIV is described in the credit file review (Chapter 4).
- Loan tape DIV must be performed on all segments that are in scope for Phase 2. To make sure that the bank has not classified exposures as out of scope that should be in scope, the NCA bank teams should perform random spot checks on out of scope exposures that exhibit potential signs of misclassification. **If and only if** the random spot checks indicate exposures have been misclassified, they should be included in the rest of Phase 2.
- Any adverse findings from DIV that may have a bearing on the analysis that will be performed later in the AQR will need to be addressed. With each adverse finding, NCA bank teams will need to decide whether the finding is material. If it is material they will need to decide whether a 'work around' is possible to address the issue without correcting the loan tape (e.g. ignore EBITDA field for the purposes of analysis) or having the bank correct the loan tape (without impacting the timelines for the AQR). The specific choice will depend on the materiality of the issue; the availability of a work around; and when the issue is found (the later an issue is found the more likely a workaround will be required).

2.2 INDICATIVE TIMELINE

Table 8 Indicative timeline for DIV	
Task	**Indicative date**[14]
Complete spot checks on relevant exposures out of scope of Phase 2	17 March 2014
Delivery of loan tape data request	**14 March 2014**
Verification of bank transposition and check totals by segment	14 March 2014
Preparation of DIV scripts completed by NCA bank teams	**14 March 2014**
Field specific checks	21 March 2014
Cross-field checks	21 March 2014
Cross time checks	4 April 2014
Distribution checks	4 April 2014
Remediation strategy for AQR decided	11 April 2014
Data set available for sample selection	**11 April 2014**

2.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 9 Illustrative models, parameter sheets and templates for DIV		
Template	**Summary of contents**	**Frequency of submission to CPMO**
T2A. Loan tape and other data dictionary	• Provides dictionary for all fields required in the loan tape • Acts as a checklist for NCA bank teams to ensure banks have provided all data required	Not required to be submitted
T2B. DIV monitoring template	• Red/Amber/Green assessment template for each check prescribed for DIV for each field/combination of fields	Weekly update of work in progress template provided

2.4 CREATION OF THE "LOAN TAPE"

The loan tape collection is the first step required in Phase 2 analysis such that DIV, sampling and the collective provisioning challenger model may be completed subsequently. The loan tape is split into four requests along AQR asset segments. For Non-retail segments (corporates, institutions, sovereigns and supranational non-governmental organisations) the tape is split into

[14] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones.

three; the facility, collateral and debtor tapes. For these portfolios facility and collateral information are aggregated to the debtor level. Three further tapes for retail SME, residential real estate (RRE) and other retail are requested at the facility level.

The loan tape should contain all the credit exposures from the portfolios selected during Phase I, which will be communicated to banks in preliminary form by 1 February and finalised by 14 February, plus the credit exposures from portfolios that are connected to those. Within these portfolios the loan tape should contain information about all loans and advances and debt securities (excl. securitisations) which are held at amortised cost (loans and receivables/held to maturity) and measured at fair value (excl. held for trading and positive replacement value of derivatives). In addition, off-balance sheet exposure (loan commitments, financial guarantees and other commitments) should be included (excl. derivative notionals). All securities financing transactions with variation margin agreement (e.g. reverse repos) should be excluded. **Only facilities with a sum of on-balance and off-balance sheet exposure above €100 for retail and €1,000 for non-retail should be included in the loan tape.**

Monetary values will be provided in integer euro amounts, if conversion from other currencies is necessary, the exchange rate at the snapshot date should be applied. This exchange rate should be from the source that significant banks use for financial reporting

Some fields are to be completed on **a best efforts basis** and are specified as such in their description. Banks should be strongly encouraged to provide these fields as they are used to reduce the scope of the sampling process – ultimately it is in the bank's interests to provide the field. However if it is not feasible in the timeline, they may be neglected.

Significant banks will be required to collate these tapes following the specifications about perimeter, required snapshots, definitions for the fields and other technical aspects as outlined below. The loan tape must be created in a standardised way, exportable as for example, a .txt or .csv file format or in plain text format without delimiters in which case it may be required that each field must be of a fixed length. A single tape should be exported for each in-scope portfolio, that is, if CRE Germany is in scope this would involve exporting three files for the facility, collateral and debtor views. If retail SME is in scope a single file can be exported. The loan tape may reside either at the NCA or the significant bank at the discretion of the NCA.

Table 10	Additional segments for which data must be submitted for each "in-scope" portfolio
In scope segment	**Additional segments for which data must be submitted**
CRE	Selected parts of SME corporate and large corporate in same country
Shipping	Selected parts of SME corporate and large corporate in same country
Aviation	Selected parts of SME corporate and large corporate in same country
Large corporate	SME corporate in same country with turnover >€50 MM (exposure >€50 MM if turnover information not available)
SME corporate	Large corporate in same country Retail SME in same country with exposure greater than €1 MM

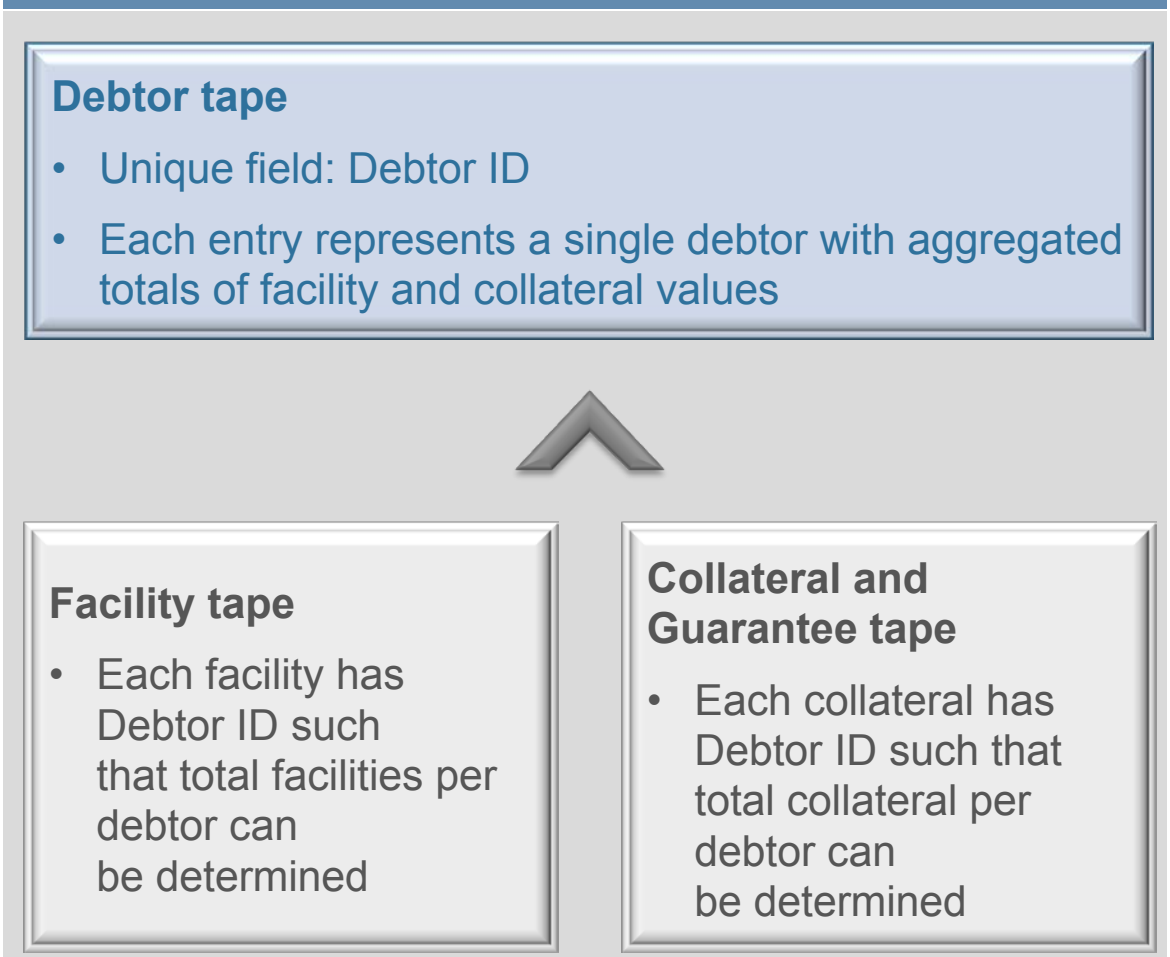
Two snapshots of data will be required:

- End of year – 31 December 2012; and
- End of year – 31 December 2013.

2.4.1 DATA STRUCTURE – NON-RETAIL EXPOSURES

Exposures which are not classified as retail under the AQR asset segmentation should be reported under the non-retail data structure. The request consists of three tapes the facility, collateral and guarantees and debtor tapes. Aggregation of facilities and collaterals is performed at the debtor level and as such debtor IDs are required for all facilities and collateral such that successful aggregation can be completed.

Figure 2 Data structure



2.4.1.1 Facility tape

The "facility tape" dataset will contain the information about individual exposures, i.e. individual commitments with unique terms under a credit agreement, such as, product type, maturity date, interest rate, etc. Each facility in the dataset must contain a debtor ID such that it can be mapped to the proper debtor. If a facility belongs to multiple debtors then this facility must be entered multiple times to account for this. Therefore there may be a repetition of the facility ID and other facility information in two separate entries with two different debtor IDs. However, the information provided for exposure for each entry should be specific to the debtor and not aggregated across debtors. The unique field in the facility tape is a concatenation of the facility and debtor IDs.

2.4.1.2 Collateral and guarantees tape

The "collateral and guarantees tape" dataset will contain the information about **all the funded risk mitigating techniques** and **unfunded risk mitigating techniques as eligible under CRR**,

i.e. valuable assets or rights that are committed to the fulfilment of the terms of a loan. The tape should reflect the level of granularity of collateral information as exists in the system of the bank. All collaterals in the dataset must contain a debtor ID such that it can be mapped to the proper debtor. If a collateral is associated with several debtors then this collateral must be entered multiple times to account for this. This would involve a repetition of the collateral identification information across entries for each separate debtor ID, however the allocated amount must be specific to the debtor. The unique field in this tape is the concatenation of the debtor and collateral IDs.

2.4.1.3 Debtor tape

The "debtor tape" dataset will contain information about the debtors included in the dataset. "Debtor" means an obligor within the meaning of CRR. The unique debtor ID allows aggregation of facilities and collateral to the debtor level**. It is expected that for corporate exposures there may be several facilities and collaterals for a given debtor.**

2.4.2 DATA STRUCTURE – RETAIL EXPOSURES

For retail exposures there is a simplified request consisting of customised single tapes for each retail SME, residential real estate and other retail exposures. These requests are defined at the facility level with each entry representing a single facility and associated collateral (RRE only). As these will create single entries in the database, if there are multiple collaterals connected to a facility the collateral value/allocated amount information for this entry must include all these collaterals grouped together (i.e. the sum). Other collateral fields (collateral ID, collateral type, collateral location (country and region) and date of last appraisal) should be populated with information of the primary collateral which is that of the highest allocated value to the facility. Unique fields are a concatenation of facility and debtor IDs.

2.4.3 FIELDS TO BE INCLUDED

The fields to be included in the loan tape are described below:

2.4.3.1 Non-retail exposures - facility fields

- Snapshot date (R_SNAP_F);
- Booking entity ID (R_ENTITY);
- Booking country (R_COUNTR);
- Branch ID (R_BRANCH);
- Internal ID facility (R_IDFF);

- Internal ID debtor (R_IDFD);
- AQR asset segment (S_AQRASF);
- Regulatory exposure segmentation according to CRR (S_CRR);
- Current contractual maturity (B_RESMAT);
- Product type (B_PROD);
- Currency (B_CURR);
- Effective interest rate (B_EFFRAT);
- Current interest rate (B_CURRAT);
- Name of asset protection scheme (B_PROT);
- On balance exposure (E_ONBAL);
- Off balance exposure (E_OFFBAL);
- Credit conversion factor (E_CCF);
- Watch list (S_WATCH);
- Current number of days past due (D_DPD);
- Forborne according to internal definition (FO_INT); and
- Fair value level 1, 2 or 3 (A_FAIRVA).

2.4.3.2 Non-retail exposures - collateral and guarantees fields

- Snapshot date (R_SNAPC);
- Internal ID collateral (R_IDCC);
- Internal ID Debtor (R_IDFD);
- Collateral type (C_TYPE);
- Country (C_COUNTR);
- Region (C_REGION);
- Credit protection value (C_VAL);
- Date of last appraisal (C_DATE); and
- Allocated amount (C_COVER).

2.4.3.3 Non-retail exposures - debtor fields

- Snapshot date (R_SNAPD);
- Debtor name (R_NAME);
- Internal ID debtor – Unique field (R_IDFD);
- Internal ID group of connected clients (R_IDCC);
- Identification if the debtor is a related party (R_RELATD);

- Geography (R_GEOGD);
- AQR asset segment (S_AQRSD);
- NACE code (S_NACED);
- NPE according to internal definition (S_NPEINT);
- NPE according to EBA definition (S_NPEEBA);
- NPE in last 12 months (S_NPE12M);
- Total debt (B_DEBT);
- Total equity (B_EQ);
- Total EBITDA (B_EBITDA);
- Total assets (B_ASSET);
- PD according to internal rating (R_INTRAT);
- Credit quality step of the debtor (R_CREDQ);
- Impairment flag (P_PROVD);
- Specific allowances (P_SPECD); and
- General allowances/IBNR (P_IBNRD).

2.4.3.4 Retail SME exposure fields

- Snapshot date (R_SNAPF)
- Internal Id facility (R_IDFF)
- Internal Id debtor (R_IDFD)
- Geography (R_GEOGF)
- AQR Asset segment (S_AQRASF)
- Current contractual maturity (B_RESMAT)
- Product type (PROD)
- Currency (B_CURR)
- Effective interest rate (B_EFFRAT)
- Current interest rate (B_CURRAT)
- Name of asset protection scheme (B_PROT)
- On balance sheet exposure (E_ONBAL)
- Off balance sheet exposure (E_OFFBAL)
- Credit conversion factor (E_CCF)
- NPE according to internal definition (S_NPEINT)
- NPE according to EBA simplified definition (S_NPEEBA)
- Watch list (S_WATCH)

- NPE in the last 12 months (S_NPE12M)
- Days past due (D_DPD)
- Forborne according to internal definition (FO_INT)
- PD according to internal rating (R_INTRAT)
- Fair value level 1,2,3 (A_FAIRVA)
- Impairment flag (P_PROVF)
- Specific allowances (P_SPECF)
- General allowances/IBNR (P_IBNRF)

2.4.3.5 Residential real estate exposures fields

- Snapshot date (R_SNAP_F);
- Booking entity ID (R_ENTITY);
- Booking country (R_COUNTR);
- Branch ID (R_BRANCH);
- Internal ID facility (R_IDFF);
- Internal ID debtor (R_IDFD);
- Geography (R_GEOGF)
- AQR asset segment (S_AQRASF);
- Regulatory exposure segmentation according to CRR (S_CRR);
- Current contractual maturity (B_RESMAT);
- Channel (B_CHAN)
- Product type (B_PROD);
- Currency (B_CURR);
- Effective interest rate (B_EFFRAT);
- Current interest rate (B_CURRAT);
- Name of asset protection scheme (B_PROT);
- On balance exposure (E_ONBAL);
- Off balance exposure (E_OFFBAL);
- Credit conversion factor (E_CCF);
- Loan to income ratio (E_LIR)
- NPE according to internal definition (S_NPEINT)
- NPE according to EBA simplified definition (S_NPEEBA)
- NPE in last 12 months (S_NPE12M)
- Current number of days past due (D_DPD);

- Forborne according to internal definition (FO_INT);
- PD according to internal rating (R_INTRAT);
- Fair value level 1,2 or 3 (A_FAIRVA);
- Impairment flag (P_PROVF);
- Specific allowances (P_SPECF);
- General allowances/IBNR (P_IBNRF);
- Internal ID collateral (R_IDCC);
- Collateral type (C_TYPE);
- Country (C_COUNTR);
- Region (C_REGION);
- Credit protection value (C_VAL);
- Date of last appraisal (C_DATE);
- Allocated amount (C_COVER); and
- Value of loss insurance (C_VALINS).

Other retail exposures fields

- Snapshot date (R_SNAPF);
- Internal Id facility (R_IDFF);
- Internal Id debtor (R_IDFD);
- Geography (R_GEOGF);
- AQR Asset segment (S_AQRASF);
- Current contractual maturity (B_RESMAT);
- Channel (B_CHAN);
- Product type (PROD);
- Currency (B_CURR);
- Effective interest rate (B_EFFRAT);
- Current interest rate (B_CURRAT);
- Name of asset protection scheme (B_PROT);
- On balance sheet exposure (E_ONBAL);
- Off balance sheet exposure (E_OFFBAL);
- Credit conversion factor (E_CCF);
- NPE according to internal definition (S_NPEINT);
- NPE according to EBA simplified definition (S_NPEEBA);
- NPE in the last 12 months (S_NPE12M);

- Days past due (D_DPD);
- Forborne according to internal definition (FO_INT);
- PD according to internal rating (R_INTRAT);
- Fair value level 1,2,3 (A_FAIRVA);
- Impairment flag (P_PROVF);
- Specific allowances (P_SPECF); and
- General allowances/IBNR (P_IBNRF).

2.4.4 NPE DEFINITION – EBA SIMPLIFIED APPROACH

On 21 October 2013 the EBA issued a final draft ITS on forbearance and non-performing exposures. The ITS are to be implemented by 31 December 2014. As such banks cannot be expected to fully comply by 31 December 2013. As a result, banks require practical guidance about how to implement the ITS guidelines on a best efforts basis (i.e. provide an "EBA simplified approach" for the AQR)

The EBA simplified approach that will be used is as follows:

An NPE is defined as:

- Every material exposure that is 90 days past-due even if it is not recognised as defaulted or impaired
- Every exposure that is impaired[15](respecting specifics of definition for nGAAP vs IFRS banks)
- Every exposure that is in default according to CRR

Definition of exposure

- Any facility that is NPE must be classed as NPE;
- For retail: NPE is defined at the facility level;
- For non-retail: NPE is defined at the debtor level – if one material exposure is classified as NPE, all exposures to this debtor level will be treated as NPE;

[15] Where impaired means "there is objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the asset (a 'loss event') and that loss event (or events) has an impact on the estimated future cash flows of the financial asset or group of financial assets that can be reliably estimated." (IAS39) Irrespective of whether the impacted future cash flows indicate that an impairment loss should be registered (i.e. impaired loans where impairment loss is assessed as 0 due to collateral should be viewed as being impaired because cash flows will be impacted by the liquidation of collateral).

- Materiality is defined as per the EBA ITS guidelines (i.e. as per Article 178 of CRR) and hence in line with national discretion;
- Off balance sheet exposures are included. Derivative and trading book exposures are not included as per the EBA ITS.

Forbearance is not explicitly included in the definition, though will be covered via prescription within IAS39 around the impairment treatment of concessions for IFRS banks. Consideration of forbearance will not be excluded from the AQR – it will be addressed both in terms of specific credit file reviews of concessions related impairment triggers / loss events for IFRS banks (as defined in IAS 39) and reviews of policies and processes relating to restructuring/forbearance. For nGAAP banks, inclusion of forbearance will be on a best efforts basis. Findings from file reviews may lead to adjustments to NPE ratios as a consequence of forborne loans being reclassified as impaired and therefore being classified as NPE.

The EBA's views have been sought and they are consistent with what is proposed in this sub-section.

2.4.5 INCLUSION OF DATA FOR SEGMENTS NOT IN SCOPE FOR PHASE 2

Loan tape DIV is to be performed on segments that are in scope for Phase 2 only. However, it may be that the Bank does not correctly classify exposures by the portfolio segments defined for the AQR. In order to ensure this is not the case, the NCA bank teams will perform random spot checks on exposures that exhibit characteristics that could have indications of a potential for misclassification.

To do this, sub-portfolios which show characteristics that they could be misclassified should be included in the loan tape. This is to avoid potential process risks that would result if misclassifications are identified and extra exposures need to be added to the loan tape later in the exercise.

Only sub-portfolios that are in the same country as the relevant 'in scope' portfolio should be included in the loan tape. Only exposures that are on the same source system as the in-scope portfolios should be included in the loan tape (to make the process straightforward for banks). Only exposures which show signs of misclassification, as described below, need be included in the loan tape. These exposures should be included in the tape of the in scope segment only if they are not in scope themselves. For example if shipping Germany is in scope, those exposures that are large corporate and SME corporate in Germany which have NACE code related to shipping, or a collateral which is a ship and are on the same source system as any of the shipping Germany exposures should be included in the loan tape, **only if SME corporate and**

large corporate Germany are not already in scope. These exposures will be included in both the 2013 and the 2012 snapshot (as there must be continuity between the 2 snapshots).

Table 11 Signs of potential misclassification for segmentation checks

In scope segment	Additional segments to be checked for inclusion in scope	Potential sign of misclassification in segments not defined as in scope
CRE	SME corporate and large corporate in same country	1a. NACE code is related to the relevant industry (F41, F43, L68) 1b. Product type is term loan or mortgage with committed and/or uncommitted limit >50% of drawn balance (indicative of asset finance in development phase). Maturity is medium term i.e. >1year. Exposure>€5 MM 1c. Long term secured facility with relatively low average interest rate relative to other corporate exposures 1d. Product code indicates some form of development finance
Shipping	SME corporate and large corporate in same country	2a. NACE code is related to the relevant industry (C30, C33, G46, H50) 2b. For shipping, collateral type is a ship
Aviation	SME corporate and large corporate in same country	3a. NACE code is related to the relevant industry (C30, C33, G46, H51) 3b. For aviation, collateral type is an aircraft
Large corporate	SME corporate in same country with turnover >€50MM (exposure >€50MM if turnover not available)	4a. SME corporate in same country with turnover >€50 MM (exposure >€50 MM if turnover not available)
SME corporate	Large corporate in same country Retail SME in same country with exposure greater than €1MM	5a. Aggregate exposure greater than €1 MM 5b. Turnover < €50 MM

Random spot checks should be performed on the exposures that show signs of misclassification. The NCA bank teams will therefore need to randomly select debtors which exhibit characteristics of misclassification and to perform the necessary checks.

For each of the potential signs above (1a to 5b), 10 Debtor IDs should be selected at random and basic checks performed into the nature of the counterparty including:

- Performing a web search on the specific company;
- Reviewing the electronic credit mark-up for the counterparty; and

- Speaking to the RM responsible for the counterparty.

NCA bank teams should ensure, and be able to demonstrate that debtors have been selected at random.

If more than 1 out of the 10 debtors has been misclassified then either: all exposures with the potential signs of misclassification above should be included in scope for Phase 2 or all exposures with the particular sign of mis-classification should be checked (providing this does not impact the timelines for the exercise). E.g. if 2 out of 10 debtors with NACE code real estate should be considered as CRE and there is no other way to verify the remaining exposures, then all exposures with a NACE code of real estate should be included in Phase 2.

If any issues with misclassification are identified the perimeter for inclusion within Phase 2 should be extended and the relevant segmentation reclassified. Any issues with misclassification should be highlighted in the reporting template and reported to the NCA and CPMO. The NCA should satisfy itself that issues around misclassification have been suitably dealt with.

2.4.6 OTHER TECHNICAL ASPECTS

Each significant bank can use data manipulation software of their preference as long as this offers the standard features and, in particular, is prepared to easily export and import data in plain text formats (e.g. csv, txt, or plain ASCII without delimiters etc.).

2.4.7 REQUIRED SNAPSHOTS

Two snapshots of data will be required:

- End of year – 31st December 2012; and
- End of year – 31st December 2013.

All fields are required for the Dec 2013 snapshot. However, only a reduced data request is required for Dec 2012. These two snapshots should be exported as separate files. Significant banks may use pro-forma consolidation statements as long as highest quality standards are preserved (no material divergences should appear between pro-forma information submitted in March, and official statements, finished two/three months later). Two snapshots are required for the calculation of cure rates and probability of impairment in the collective provisioning analysis and as such are vital to the exercise.

2.4.8 DEFINITIONS

It may be that specific information is not available for loan tape completion or that specific fields are not required for a given entry. A convention will be applied in these cases: “not

applicable" will be designated as "N/A" for text and "11111111111" for numeric fields; whereas "missing information" will be designated as "MISS" for text and "99999999999" for numeric fields. For the avoidance of doubt MISSING means that the bank does not have access to the information, NOT APPLICABLE means that the field is not required for a given facility/collateral/debtor or does not apply to that bank e.g. "Name of asset protection scheme" if there is no scheme protecting a given exposure. As a further example if a facility has no off-balance sheet exposure this would be entered as a 0 and not classed as NOT APPLICABLE.

2.4.9 PROVISIONS

If a significant bank cannot allocate provisions at the level required (for example if these are allocated at the portfolio or country level) then additional qualitative information is requested such that the NCA bank team can understand how these provisions are allocated. This can be in the form of a Word, PowerPoint or Excel document and should cover at a minimum the rules of the allocation of provisions by the significant bank.

2.5 DATA MANIPULATION

- Before performing checks, the NCA bank team will need to carry out a number of steps to prepare the data for analysis this will include
  - Aggregating up exposures and collateral values to the debtor level; and
  - Merging different time snapshots of the loan tape to allow through time analysis. This is discussed in more detail below.

2.5.1 AGGREGATING EXPOSURES AND SECURITY TO THE DEBTOR LEVEL

The following fields will need to be created at the debtor level (unless specified otherwise) from either facility or collateral tapes for non-retail exposures for non-retail exposures

Table 12 List of fields to be aggregated to debtor level for non-retail exposures	
New field/new field code	**Nature of calculation (field required from facility/collateral view)**
Forbearance flag (D_FOR)	Yes/no (Y/N). If any of the facilities of a debtor are considered forborne all exposures are considered forborne for corporates; (FO_INT)
Total value of credit protection (D_VAL)	Group by collateral ID (R_IDCC) averaging collateral value for each ID (C_VAL). i.e. the collateral value should be the same each time it appears for a given collateral. Once all the unique collaterals are identified, their value should be summed
Allocated amount (of credit protection) (D_ALCOLL)	Sum of all collateral entries for a given debtor across the allocated amount field (C_COVER)
On balance sheet exposure (D_ONBAL)	Sum of all facilities for a given debtor for the on-balance sheet exposure (E_ONBAL)
On balance sheet exposure (D_OFFBAL)	Sum of all facilities for a given debtor for the off-balance sheet exposure (E_OFFBAL)
Total exposure per facility (F_EXP) – created at the facility level	On balance exposure + (CCR*Off balance exposure) (E_ONBAL, E_OFFBAL, E_CCF).
Exposure (D_EXP)	Sum of total exposure per facility (F_EXP) across all facilities of a given debtor
LTV (D_LTV)	Sum of exposure (D_EXP)/Sum of allocated collateral value (D_ALCOLL)
Days past due (D_DAYPD)	Number of months past due calculated for the debtor as the worst past due status of all exposures in the loan tape At the debtor level, the worst case for any facility is taken. (D_DPD)
Watch list (D_WATCH)	Yes/no (Y/N). If any of the facilities associated with a debtor are Watch list (S_WATCH) = Y, then yes, no otherwise.

For retail exposures the following fields will be created at the facility level.

Table 13 Fields required to be created for retail exposures	
New field/new field code	**Nature of calculation**
Exposure (F_EXP)	On balance exposure + (CCR*Off balance exposure) (E_ONBAL, E_OFFBAL, E_CCF)
LTV (F_LTV)	Exposure (F_EXP)/allocated amount (C_COVER)

2.5.2 MERGING DIFFERENT TIME SNAPSHOTS

In order to complete the collective provisioning (described in Chapter 7) at both the facility (retail) and debtor (non-retail) level, the tapes from each time point must be merged. This should consist of a list of unique (combination of facility and debtor) IDs with a flag indicating which exist at each date point. Additionally it will include values of fields as outlined in the Tables below at both Dec 2012 and Dec 2013. A merged tape will be created for each in-scope portfolio by the NCA bank teams. The merged tape will follow the same structure as the non-merged tape, that is for non-retail it will be split by debtor, facility and collateral views and for retail a single facility view will be created. For non-retail exposures the following information is required at the debtor level.

Table 14 Fields required in the merged loan tape for non-retail exposures (debtor tape)	
Field name	**Description**
Portfolio	Portfolio of each debtor as of December 2013 (combination of geography (R_GEOGD) and AQR asset segment (S_AQRSD)
Debtor ID	Debtor unique ID (R_IDFD)
Exposure	Exposure of the debtor (D_EXP)
NPE EBA status	NPE status according to the simplified EBA definition (S_NPEEBA)
NPE internal	NPE according to the internal definition of the bank (S_NPEINT)
NPE in last 12 months	Has debtor been considered NPE in last 12 months according to EBA simplified definition (S_NPE12M)
Days past due	Days past due of the debtor (D_DAYPD)
Forbearance flag	Flag for the forbearance status of the debtor (D_FOR)
Impairment flag	Impairment status of the debtor (P_PROVD)
LTV	LTV of the debtor (D_LTV)
AQR asset segment	AQR asset segment of the debtor (S_AQRASD)
Debt	Debt for the debtor (B_DEBT)
EBITDA	EBITDA for the debtor (B_EBITDA)
Watch list	Is the debtor considered on a watch list (D_WATCH)
Related Party	Is the debtor a related party (R_RELATD)

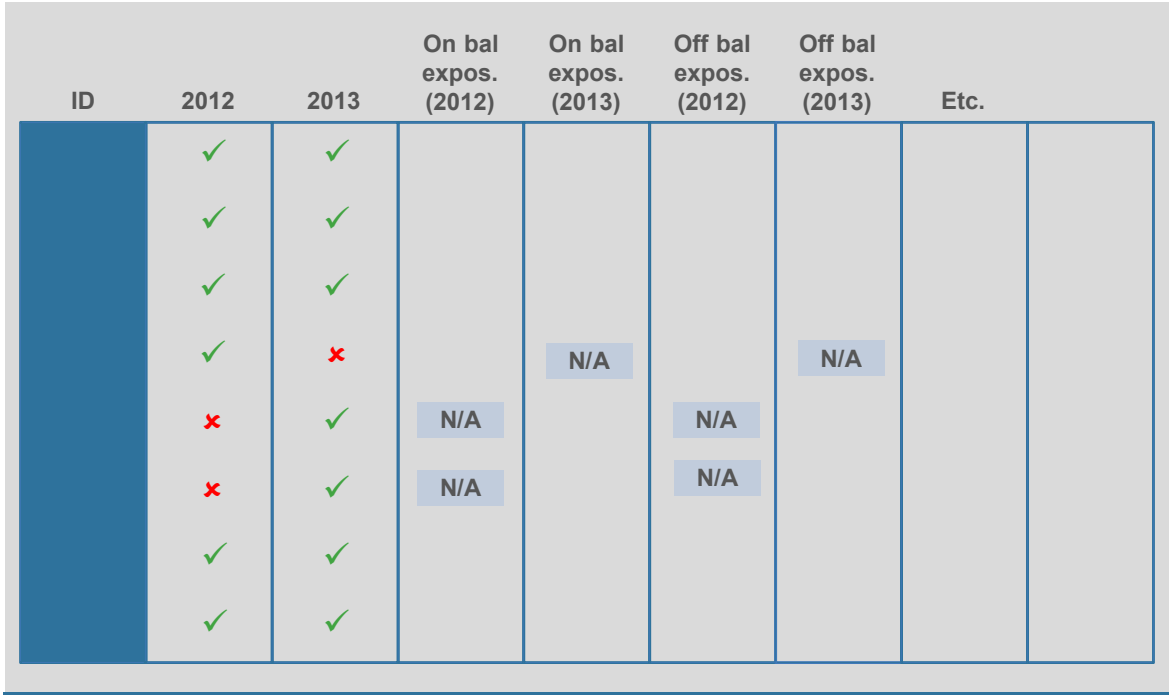
The following fields are required from the facility and collateral views for non-retail exposures in the merged loan tape.

Table 15 Fields required in the merged loan tape for non-retail exposures (facility and collateral view)	
Field name	**Description**
Facility ID	Facility ID of the facility (R_IDFF)
Debtor ID	Debtor ID associated with the facility (R_IDFD)
On balance sheet exposure	On balance sheet exposure of the facility (E_ONBAL)
Off balance sheet exposure	Off balance sheet exposure of the facility (E_OFFBAL)
CCF	Credit conversion factor of the facility (E_CCF)
Current interest rate	Current interest rate of the facility (B_CURRAT)
Current contractual maturity	Current maturity of the facility (B_RESMAT)
Collateral ID	Collateral ID of the collateral from the collateral tape (R_IDCC)
Debtor ID	Debtor ID associated with the collateral from the collateral tape (R_IDFD)
Allocated amount of collateral	Allocated amount of the collateral from the collateral tape (C_COVER)
Exposure	Exposure of the facility (F_EXP)

The following fields are required for retail exposures in the merged loan tape.

Table 16 Fields required in the merged loan tape for retail exposures	
Field name	**Description**
Facility ID	Facility ID of the facility (R_IDFF)
Debtor ID	Debtor ID associated with the facility (R_IDFD)
On balance sheet exposure	On balance sheet exposure of the facility (E_ONBAL)
Off balance sheet exposure	Off balance sheet exposure of the facility (E_OFFBAL)
CCF	Credit conversion factor of the facility (E_CCF)
LTV	LTV of the facility (F_LTV)
Exposure	Exposure of the facility (F_EXP)
Product type	Product type of the facility (B_PROD)
Channel	Channel through which the facility was sold (B_CHAN) (RRE and retail other only)
Internal rating (where appropriate)	PD according to internal rating (R_INTRAT)
NPE EBA status	NPE status according to the simplified EBA definition (S_NPEEBA)
NPE internal	NPE according to the internal definition of the bank (S_NPEINT)
NPE in last 12 months	Has facility been considered NPE in last 12 months according to EBA simplified definition (S_NPE12M)
Days past due	Days past due of the facility (D_DPD)
Current interest rate	Current interest rate of the facility (B_CURRAT)
Current contractual maturity	Current maturity of the facility (B_RESMAT)
Watch list	Is the facility under observation on a watch list (S_WATCH)
Impairment flag	Is the facility impaired (P_PROVF)
Forbearance flag	Flag for the forbearance status of the debtor (FO_INT)
Loan:income ratio	Loan to income ratio (for RRE only) (E_LIR)
Collateral ID	Collateral ID of the collateral from the collateral tape (R_IDCC)
Allocated amount of collateral	Allocated amount of the collateral from the collateral tape (C_COVER)

Figure 3 Merging time snapshots



2.6 DATA INTEGRITY VALIDATION ANALYSIS

In the following sub-sections the approach to analysing the different types of checks is described, including the required remediation steps before sampling can be finalised. For the avoidance of doubt – DIV checks performed on data directly sourced from the bank should be performed on the raw data prior to any manipulation as described above. Where checks require some level of manipulation prior to performing the DIV check this clearly does not apply.

A template will be provided to ensure responses are delivered in a standardised manner.

The following checks will be described below:

- Reconciliation checks;
- Field-specific checks;
- Cross-field checks;
- Cross-time checks; and
- Sense-check of distribution of observations.

2.6.1 RECONCILIATION CHECKS

2.6.1.1 Tests to be performed

Once the loan tape has been created, the Bank should provide evidence that there is consistency between the loan tape and the internal system from which the loan tape was created. To

facilitate this, a number of reconciliation checks will be performed across aggregated totals. At a minimum these must include

- Check in the number of lines in the loan tape
- Total on/off-balance sheet exposure;
- Total performing/non-performing exposure;
- Total number of non-performing exposures;
- Total forborne exposure
- Total number of forborne exposures; and
- Total specific and general provision.

The Bank must provide reconciled totals between the source system (i.e. the source system of the loan tape data, not the accounting system) and the loan tape. The subsequent reconciliation check by the NCA bank team must ensure that these reconciliations are fair and accurate. This may involve interviews with the analyst who performed the checks and a 'walkthrough' of how the result was achieved and at least a basic check on the methodology employed for the purpose to ensure confidence in the result. However, the reconciliation need not be replicated by the NCA bank team. Additionally, the NCA bank team must understand and review the quality checks that the Bank has undertaken as part of the loan tape collation.

For loan tapes aggregated from multiple sources, checks should be performed on each source. The field used to calculate the check total for each source should be Booking entity ID (R_ENTITY) (Note: Clarification has been provided that if multiple sources are used for the same legal entity a differentiation should be made in this field)

These checks are designed to ensure that there can be confidence that the loan tape consists of all the exposures of the in-scope portfolio, and that there have been no issues with format conversions in the transfer between systems

In addition the NCA bank team will perform a manual check on 10 random records in the loan tape to ensure that they match the source system. Should there be errors which the NCA bank team consider critical to the continuation of the exercise, the loan tape should be regenerated, to the extent it does not invalidate the "straight line" approach to DIV.

2.6.1.2 Remediation actions

If any transposition errors are observed or suspected, the loan tape should be reproduced, addressing the issues. If this is not possible appropriate remediation strategies should be applied (as described later in this section)

2.6.2 FIELD-SPECIFIC CHECKS

2.6.2.1 Tests to be performed

The following primarily automated checks will be performed across all fields in the loan tape and are a basic validation that the data received is proper and accurate. Field specific checks should be performed on the raw data provided by the bank, prior to any data manipulation by the NCA bank team.

The minimum set of field specific checks to be performed on **continuous fields** are as follows:

- Check that all fields requested in the loan tape are present;
- Check for duplications of unique fields;
  - E.g. Debtor ID (in debtor tape);
- Check the number of missing (blank) values within a given field;
- Check the number of values of the incorrect format i.e.
  - Text in numeric fields (or vice versa);
  - Incorrect units (MM vs. BN);
  - Incorrect N/A's;
  - Values outside prescribed options;
- Check that values fall within valid ranges
  - Percentages between 0 and 1
- Check there are no negative values for the following fields
  - Effective interest rate (B_INTRAT)
  - Current interest rate (B_CURRAT)
  - On balance sheet exposure (E_ONBAL)
  - Off balance sheet exposure (E_OFFBAL)
  - Current number of days past due (D_DPD)
  - Specific allowances (P_SPECD/P_SPECF))
  - General allowances (P_IBNRD/P_IBNRF)
  - Credit protection value (C_VAL)
  - Allocated amount (C_COVER)
  - Total Debt/Equity/EBITDA/Assets (B_DEBT/B_EQ/B_ASSET/B_EBITDA);
- Check with the significant bank the validity of top20/bottom 20 exposure values (E_ONBAL/E_OFFBAL)

- Check that no “default” values have been used. For example, entries entered as dummy values such as “999999999”, “000000000”; and
- For collateral values (C_VAL, C_COVER); if the highest value in a field is repeated, check with the significant bank the validity of these repetitions

The minimum set of field specific checks to be performed on **discrete fields** are

- Check that all fields requested in the loan tape are present
- Check the number of missing (blank) values within a given field
- Check the number of values of the incorrect format i.e.
  - Text in numeric fields (or vice versa)
  - Incorrect N/A’s
  - Where optional values are provided, check that one of these has been selected;

The minimum set of field specific checks to be performed on **date fields** are

- A check that all fields requested in the loan tape are present;
- Check the number of missing (blank) values within a given field;
- Check the number of values of the incorrect format i.e. not dd/mm/yyyy; and
- For date fields check that no dates are in the future

The minimum set of field specific checks to be performed on **identification fields** are

- A check that all fields requested in the loan tape are present
- Check the number of missing (blank) values within a given field
- Check the number of values of the incorrect format
- Identify any duplicates of unique IDs; and
- Check that no “default” values have been used. For example, entries entered as dummy values such as “999999999”, “000000000”

An assessment of the quality of the data will be made using a Red, Amber, Green (RAG) status for each field and test. The triggers for each RAG classification for field specific checks are presented in the following Table.

Table 17 RAG triggers for field specific checks	
Status	**Trigger**
Red	• >1% of data points erroneous; or • Absence of a field required for credit file review in the data set; or • >1 (top 20/bottom 20) values incorrect.
Amber	• >0.1% and ≤ 1% of data points erroneous; or
Green	• ≤ 0.1% of data points erroneous.

The field specific checks should be performed quickly (within one week of DIV beginning).

2.6.2.2 Remediation actions

Given the field specific issues can be checked quickly, any issues should be identified sufficiently swiftly to be addressed by the bank. All Amber and Red issues will require a remediation strategy to be put in place. If issues cannot be addressed by the bank, conservative workarounds should be found – e.g. missing or N/A collateral type viewed as unsecured etc. The specific remediation approach will depend on the circumstance and will therefore be dependent on the bank and the NCA bank team to work together to resolve.

NCAs should ensure they are comfortable with the remediation strategy proposed. Remediation strategies for Red and Amber issues will be reported in the DIV template (to be provided before the beginning of Phase 2) and reviewed by CPMO.

Any issues should be found and addressed before the sample is selected (though development of code to select sample should not wait until loan tape is finalised).

2.6.3 CROSS-FIELD CHECKS

2.6.3.1 Tests to be performed

Within the loan files, there are fields which have a dependency on each other, that is, if a field is of a specific value e.g. if the facility has a number of days past due greater than 90, then the related field must also take a specific value e.g. must be flagged as NPE according to simplified EBA definition . Checks are to be made across such fields to identify inconsistencies in the loan tape. These checks can be automated and are outlined in detail in the DIV template (T2b). Cross-field checks should be performed on the raw data provided by the bank, prior to any data manipulation by the NCA bank team.

Table 18 Cross-field checks	
Cross-field check	**Description**
AQR status vs. NPE definition	The NPE EBA status of the facility/debtor (S_NPEEBA) (performing/non-performing) should match the maximum number of days past due of any facilities (D_DPD) and the impairment status according to the NPE definition of the significant bank (P_PROVD/P_PROVF))
Debtor vs. facilities	Does each debtor on the debtor tape have at least on facility on the facilities tape (non-retail only) (using R_IDFD)
Impaired flag vs. provisions	If the exposure is flagged as individually provisioned (P_PROVD/P_PROVF) then specific allowances (P_SPECD/P_SPECF) must be greater than 0
Impaired flag vs. provisions	If the exposure has specific allowances > 0 (P_SPECD/P_SPECF), then it must be flagged as individually provisioned (P_PROVD/P_PROVF)
Collateral type vs. location	If a collateral is flagged as a funded credit protection (C_TYPE = funded type) then the collateral location (C_COUNTR and C_REGION) must be completed. If the collateral is flagged as unfunded (C_TYPE = unfunded type) then collateral location must not be completed (C_COUNTR and C_REGION)
Credit protection value vs. allocated amount	The allocated credit protection to a debtor (C_COVER) should be less than or equal to the total value of the credit protection (C_VAL).
Credit protection value vs. allocated amount	The total allocated collateral value (C_COVER) (aggregated across debtors using collateral IDs (R_IDCC)) for any collateral linked to more than one debtor should be less than or equal to the collateral value provided for that collateral (C_VAL) i.e. the total amount allocated to debtors from a single collateral must not be larger than the value of that collateral
Credit protection value	The credit protection value (C_VAL) should be equal each time it appears for a given collateral item i.e. for each collateral ID (R_IDCC) the collateral value is the same for each entry in the tape, only the allocated amount is different

The triggers for RAG statuses for cross-field checks are outlined in Table 19.

Table 19 RAG triggers for cross-field checks	
Status	**Trigger**
Red	> 1% of data points erroneous.
Amber	> 0.1% and ≤ 1% of data points erroneous.
Green	≤ 0.1% of data points erroneous.

The cross-field checks should be performed quickly (within one week of DIV beginning).

2.6.3.2 Remediation actions

Given the cross-field checks can be performed quickly, any issues should be identified sufficiently swiftly to be addressed by the bank. All Amber and Red issues will require a remediation strategy to be put in place. If issues cannot be addressed by the bank, conservative workarounds should be found – e.g. collateral value < allocated amount implies using allocated amount as a conservative approach. The specific remediation approach will depend on the circumstance and will therefore be dependent on the bank and the NCA bank team to work together to resolve. Any conservative workarounds/proxies applied should be communicated to the NCA and CPMO as soon as they occur.

NCAs should ensure they are comfortable with the remediation strategy proposed. Remediation strategies for Red and Amber issues will be reported in the DIV template (to be provided before the beginning of Phase 2) and reviewed by CPMO.

Any issues should be found and addressed before the sample is selected (though development of code to select sample should not wait until loan tape is finalised.

2.6.4 CROSS-TIME CHECKS

Cross-time checks will be performed to ensure the consistency of the dataset that aggregates the two snapshots, December 2012 and December 2013 (described in the Section 2.5.2 above). Assessing the evolution of some fields provides information that could not be checked otherwise.

Cross time checks will need to be performed after data tapes have been aggregated and therefore will be performed on fields processed by NCA bank teams.

2.6.4.1 Tests to be performed

Two types of tests will be carried out. First, ensuring the combination has worked correctly and there is consistency between the two snapshots; and second, checking that the forborne cases are adequately captured in the loan tape:

Ensuring consistency between the two snapshots:

- If exposure of the facility (F_EXP) in 2012 is positive and maturity date (B_RESMAT) is before December 2013, the exposure is not in the December 2013 snapshot of the loan tape or the maturity date has been updated as of December 2013 (the facility has been refinanced);

- If the facility is >90 days past due (D_DPD) in December 2012, then it is flagged as being NPE in the last 12 months (S_NPE12M) in December 2013;
- If a debtor has a positive exposure (D_EXP) in 2012 but no exposure in 2013, all the facilities linked to that debtor in 2012 should not show up in the 2013 snapshot either (and the other way around) – only applicable to non-retail;

Each check should be flagged as follows:

Table 20 RAG triggers for cross-time checks

Status	Trigger
Red	> 0.1% of data points erroneous.
Amber	> 0% and ≤ 0.1% of data points erroneous.
Green	0% of data points erroneous.

Additionally, in order to check whether the bank's forbearance flag adequately captures cases of forbearance, the following step should be carried out

- Identify exposures in financial difficulties. All of the following are considered signs of this:
  - Watch list, either as of December 2012 or December 2013 (S_WATCH);
  - Impaired, either as of December 2012 or December 2013 (P_PROVD/P_PROVF) ;
  - Past due, either as of December 2012 or December 2013 (D_DPD);
  - Debt/EBITDA ≥ 6 (for large corporate and SME only), either as of December 2012 or December 2013 (B_DEBT, B_EBITDA).
  - LTV > 100% (for retail mortgage, CRE, shipping and aviation) either as of December 2012 or December 2013 (D_LTV, F_LTV).
- Identify exposures that may have been granted a concession. All the following are considered potential signs of this (for the avoidance of doubt, these would only be considered signs of concession in combination with financial distress):
  - Allocated collateral amount 2013 > Allocated collateral amount 2012 (C_COVER);
  - Interest rate 2013 < Interest rate 2012 (B_CURRAT); and
  - Extension of maturity dates between December 2012 and December 2013 (B_RESMAT).
- Each exposure should be flagged if:
  - It is in financial difficulties;

- AND it has evidence of being a concession;
- AND it is not marked as forborne/restructured as of December 2013.
- The flags for the entire loan tape will then be aggregated and assessed by portfolio as follows:

For non-retail exposures these tests should be carried out at the debtor level. For checks that must be completed at the facility level e.g. Interest rate 2013 < Interest rate 2012, Allocated collateral amount 2013 > Allocated collateral amount 2012 and extension of maturity dates a debtor will be flagged as having failed this test if any of its facilities have failed this check.

Table 21 RAG triggers for forbearance validation

Status	Trigger
Red	>5% flagged
Amber	>1% flagged
Green	≤ 1% of data points erroneous.

2.6.4.2 Remediation actions

Given the cross time checks can be performed quickly, any issues should be identified sufficiently swiftly to be addressed by the bank. All Amber and Red issues will require a remediation strategy to be put in place. Given the issues could also indicate wider problems, further investigation working with the bank may be required to ensure data integrity. The specific remediation approach will depend on the circumstance and will therefore be dependent on the bank and the NCA bank team to work together to resolve.

NCAs should ensure they are comfortable with the remediation strategy proposed. Remediation strategies for Red and Amber issues will be reported in the DIV template (to be provided before the beginning of Phase 2) for review by CPMO.

Any issues should be found and addressed before the sample is selected (though development of code to select the sample should not wait until loan tape is finalised). If issues with the check of forbearance are not properly addressed, the sample size for normal cured and normal will be increased by a factor of 4 (see Chapter 3).

2.6.5 SENSE-CHECK OF DISTRIBUTION OF OBSERVATIONS

2.6.5.1 Tests to be performed

Sense check of distributions will be performed on the raw data provided by Banks before any manipulation by NCA bank teams. The NCA bank team will be required to undertake a qualitative validation of the accuracy of frequency distributions of the following fields;

- Collateral type – no excess of "other" collateral types;
- Collateral value by collateral type – No excess of collateral value allocated to "other" collateral types;
- Segmentation fields – no excess of "other" segmentation;
- Retail other – no retail other with exposure > € 1,000,000.
- Date fields – skews toward particular time periods should be verified with the significant bank;
- Remaining maturity – If there is an excess of a particular value then this must be verified with the significant bank;
- Debtor LTV distribution for retail mortgages and CRE, shipping and aviation - limited exposure in very high and very low LTV buckets;
- Average coverage ratio by months past due and product – average coverage ratio increases with months past due for a given product;
- Exposure by CQS and PD bucket – limited exposure in low CQS buckets (unless otherwise expected);
- Average CCF for off-balance sheet exposure by product– in line with expectations given regulatory CCF benchmarks;
- % forborne and NPE – significant proportion of forborne exposure should be NPE;
- Debtor/facility level exposure – ensuring there are not unexpectedly large exposures.

NCA bank teams must assign a good/bad/fair assessment based on their best understanding according to the following descriptions.

- Good: Expected distribution across possible values;
- Fair: Some deviation from expected distribution across possible values; and
- Bad: Unexpected excess of a given value, or highly skewed distribution.

This will be a semi-automated check in that based on the output the NCA bank team may be required to follow up with the significant bank to validate unusual results. The field distribution check will likely take longer to complete than other checks given the need to review distributions. This may take 2-3 weeks to complete.

2.6.5.2 Remediation actions

If distributions are classed as "bad" they should be reviewed with the bank, to understand what is driving the unexpected distribution. If a reasonable explanation is provided that does not imply the potential for the distortion of the findings then no further action should be taken. If not, then a remediation strategy should be provided. Examples of the sorts of steps that may be required include

- Obtain additional information to 'break out' other segments and include in reissued loan tape;
- Reclassify exposures that have been included in the wrong segmentation leading to distortion of results (e.g. 2nd lien mortgages included with retail mortgages not retail secured loans);
- Bank corrects issues with a field (e.g. correcting NPE definition to include forborne exposures past due as impaired);
- Etc.

NCAs should ensure they are comfortable with the remediation strategy proposed. Remediation strategies for 'bad' classifications will be reported in the DIV template (to be provided before the beginning of Phase 2) and reviewed by CPMO.

Any issues would ideally be found and addressed before the sample is finalised. If issues are found and addressed after the sample has been selected then the NCA bank team and NCA should assess whether the change would materially impact the validity of the sample. If the issue is found to affect the validity of the sample, the sample should be reselected or additional files sampled from particular stratum taken to ensure an appropriate sample has been selected (depending on the issue).

2.7 FURTHER GUIDELINES ON THE EXECUTION OF DIV

In the following sections further guidelines around the execution of the DIV process. The key objective behind these guidelines is to:

- Ensure the DIV process is not open ended – it should be completed within the time allowed in the work plan, and re-creation of data sets should be minimised as far as possible;
- Put the onus for ensuring good quality and easy to manipulate data on the banks;
- Clarify remediation strategies that might be used by NCA bank teams to address data issues, differentiating by type of field. For this purpose, it is indicated whether the fields are "critical" for the performance of the assessment, where not flagged as critical they have to be provided where possible.

The following sections cover:

- Steps banks should take in providing loan tape to ensure as smooth a process as possible;
- Approach to dealing with in-availability of data for a particular legal entity;
- Options for dealing with lack of completeness/accuracy of specific fields.

2.8 STEPS BANKS SHOULD TAKE IN PROVIDING LOAN TAPE TO ENSURE AS SMOOTH A PROCESS AS POSSIBLE

Significant banks should provide for each snapshot date a single loan tape per portfolio (irrespective of their different booking entities contributing to the portfolio). For retail portfolios the loan tape should comprise of a single file, whereas for corporate portfolios, 3 files will be provided (A debtor view, a facility view and a collateral and guarantees view). Loan tapes format has to be agreed between the bank and the NCA bank team (typically .CSV, plain text, without delimiter). This format has to be unique for the different loan tapes of the bank.

The significant bank should ensure that the analysts that worked on sourcing and developing the tape are available during the course of the DIV process to answer any questions and to help address any issues that emerge – particularly around transposition checks.

Some fields in the loan tape have been flagged as "Where possible" (specifically financial information e.g. EBITDA, Total Assets; and external rating). Significant banks should be strongly encouraged to provide these fields as they are used to reduce the scope of the sampling process – ultimately it is in the bank's interests to provide the field. However if it is not feasible in the timeline, they may be neglected.

2.9 APPROACH TO DEALING WITH UNAVAILABILITY OF DATA FOR A PARTICULAR LEGAL ENTITY

It may be the case that a significant bank is not able to deliver the required data for a particular legal entity in a portfolio (a "sub-portfolio") in the time available or the entire data set is of insufficient quality to be usable. In these circumstances delivery or remediation of data should not be allowed to delay the overall timelines. Three scenarios are possible, each with a different approach to resolving:

Scenario	Solution
The significant bank can provide no information on the sub-portfolio	Assume misstatement equal to the total reported carrying amount of the sub-portfolio
The significant bank cannot provide the critical fields but is able to provide a breakdown of the NPE rate and coverage ratio for the portfolio	If critical data is available for some sub-portfolios (covering at least 50% of the exposures in the portfolio), calculate an estimate of the misstatement for the sub-portfolios with missing critical data as **the higher of:** • 50% of the current provisions for the sub-portfolio • 2 times the equivalent mis-statement for the part of the portfolio with data (adjusted pro-rata for exposure, NPE and coverage ratio of the sub-portfolio without critical data) If less than 50% of the portfolio has critical data, then treat the uncovered part of the portfolio as per scenario 1
The significant bank can only provide the critical fields in the loan tape request	• For credit file review: Perform sampling on the sub-portfolio, using the available information and following the remediation strategies prescribed • For Collective Provision Analysis: Perform analysis on reduced segmentation. Consider critically the validity of the bank's collective provisioning methodology given the inability to produce basic data

2.10 OPTIONS FOR DEALING WITH LACK OF COMPLETENESS/ACCURACY OF SPECIFIC FIELDS

Once the data is delivered it may be that some fields are incomplete or DIV highlights issues with data that make the field partially or entirely unusable. The solution to any issues should begin with the banks to understand:

- Has a transposition error occurred that can be fixed by re-transposing or otherwise correcting the loan tape?
- Are there alternative sources of data that could be used to meet the required purpose (e.g. provide an alternative product segmentation, provide a proxy for a field – e.g. determining Channel from product codes)?

If the significant bank cannot provide a satisfactory solution in the time available, timelines should not be allowed to be delayed. There are a number of critical fields that have to be provided (e.g. exposure, Debtor ID) if these cannot be provided then the steps described in the previous section should be followed. However if issues are found with other fields that can't be addressed by the significant bank, suitably appropriate remediation strategies should be applied. The remediation strategies fall into four main categories:

Category	Example	Remediation strategy
"Where possible" field is not provided	Debt/EBITDA can't be calculated	• Field cannot be used to reduce scope of sampling
Field used to segment collective provision analysis is not available	"Product segment" not available	• Perform collective provision analysis at higher level of segmentation • Consider the collective provisioning model of the significant bank in light of the fact that it cannot produce some alternative segmentations
Forbearance flag is unavailable or can't be checked	Remaining contractual maturity unavailable	• A conservative proxy for forbearance will be designated by each NCA and submitted to the CPMO for approval along with supporting evidence before sampling is begun • If such a proxy cannot be found then a conservative adjustment will be applied to the collective provision roll rate matrix (retail only).
Field is missing or of low quality, where a conservative proxy can be applied	CCF is unavailable	• Apply the conservative proxy (e.g. assume 100% CCF)

2.11 OUTPUTS

The key objectives of the DIV process are

- To ensure that the key data used for sampling and collective provisioning analysis is fit for purpose
- To highlight any issues with data segmentation at the bank for use in stress testing

The following output will need to be produced for this workblock:

Table 22 Outputs from DIV

Workblock	Output
2. Loan tape creation and DIV	• Complete T2B. DIV monitoring template • O2B PowerPoint presentation describing any remedial action the bank should take as a result of DIV

3 SAMPLING

Files from the in-scope portfolios for Phase 2 will be sampled in order to carry out the credit file review. The sampling approach is based on statistical techniques and is compliant with international audit standards. Its purpose is to optimise the feasibility and credibility of the exercise by minimising the sample size subject to a low sampling error; the error is expected to be less than 5% of total post-adjusted provisions, with a level of assurance of at least 90%. In reality, the potential for overestimating the error will be much lower than this, because of the safeguards introduced in the projection-of-findings process.

The resulting sample sizes will vary across banks, but will generally fall within the range of around 250 and 450 files per portfolio in scope., although some significantly smaller samples may occur in some portfolios. The use of stratification will help to keep the sample size small: as larger and riskier exposures will be oversampled, up to a 100% examination, the adjustments will be derived from direct observation in many cases. Otherwise, the projection of findings will be applied to strata of more homogeneous medium and low-size exposures, in which sample rates are not 100%. The level of scrutiny will be higher for larger less homogeneous exposures.

Preparation for sampling should begin before the loan tape is finalised. The sample selection should be finalised by 18 April and will be carried out by the NCA bank team, under close supervision of the corresponding NCA and the CPMO through the quality assurance process. The outcomes of the sampling will feed into the credit file review, though the review of the "priority debtors" (the largest debtor level exposures by risk class) should begin before the sample is finalised.

3.1 SUMMARY OF THE APPROACH

- Sampling techniques will be applied to increase the feasibility of the credit file review, as is well established in auditing practice[16];
- Sampling will be applied to portfolios in scope for the credit file review:
  - Only portfolios selected for Phase 2 are sampled;
  - No sampling of retail exposures (with the exception of retail mortgages).
- One sample will be selected for each portfolio (e.g. a significant bank with 5 portfolios in scope for credit file review will have 5 samples);

[16] ISA 500, A52: *"(...) The means available to the auditor for selecting items for testing are: (a) selecting all items (100% examination); (b) selecting specific items; and (c) audit sampling. The application of any one or combination of these may be appropriate depending on the particular circumstances, for example, the risks of material misstatement related to the assertion being tested, and the practicality and efficiency of the different means."*

- The sampling process is designed to focus resources on areas of the portfolio with the greatest uncertainty, therefore significant parts of the portfolio are excluded from any sampling (and hence projection of findings);
  - Sub-segments with strong evidence that there is highly unlikely to be any issues are excluded from analysis (e.g. ECAI CQS [External Credit Assessment Institutions' Credit Quality Step] of 4 or better; Debt/EBITDA <1 and Equity/Assets >50%);
  - No sampling of the smallest exposures.
- Once the above exclusions are made, the remaining portfolio is divided into 49 strata differentiated by size of debtor level exposure and by risk and a sample is selected from each stratum:
  - Exposure buckets set based on composition of bank's portfolios (e.g. the exposure bucketing will be different among an SME and a Large Corporate portfolio);
  - Risk buckets set using basic risk indicators available to all banks (e.g. past due).
- The number of files selected from each strata is set to target a maximum error of 5% in post adjustment provisions at a 90% confidence level assuming a relatively significant (but not extreme) level of adjustment to provisions of around 25% of the original levels and no safeguards to limit potential for overestimation in projection of findings:
  - Error will be much smaller if level of adjustment is much smaller than 25%;
  - A number of steps will be taken in the projection of findings process to mitigate the risk of overestimating adjusted provisions, which will reduce the level of error;
  - If the adjustment to provisions is much higher than 25% (e.g. 100%) then the potential for error is greater, though this is deemed appropriate.
- Had a stratified sample not been taken, the required sample size would have been approximately 50% bigger.
- The number of files sampled from each strata varies depending on a number of criteria:
  - Concentration of portfolio: Highly concentrated portfolios such as project finance and shipping have higher sampling rates;
  - Number of observations in the strata: The greater the number of observations in a stratum the greater the size of the sample taken from that stratum;
  - Riskiness of the strata: Greater scrutiny placed on non-performing corporate exposures than performing (given greater uncertainty around provisioning levels); Greater scrutiny on performing high risk retail mortgages (given provision levels for defaulted exposures will be estimated using the collective models);

- Adequacy of the forbearance flag: Greater scrutiny will be placed on banks without an adequate forbearance/restructuring flag.

- A 'reserve sample' will also be selected to allow for file replacement in the credit file review and to allow anomalies to be analysed before projection of findings. It is not intended that the reserve sample will be analysed in credit file review except in extreme circumstances;
- The NCA bank team will select the sample from the bank's loan tape data following DIV (except for the priority group which can be selected with some confidence prior to the completion of DIV), though preparation to select the sample should run in parallel to the execution of DIV:
  - A set of templates and example tools are provided by CPMO;
  - NCA bank teams will apply the prescribed rules to set the sample rates per strata for each portfolio;
  - NCA bank teams will submit the populated templates and results to the corresponding NCA and CPMO;
  - The corresponding NCA and CPMO will verify the appropriateness of the numbers and ensure consistency across banks through cross-comparisons (see Chapter 10 on Quality Assurance);
- The NCA should be satisfied that the sample selected is representative of the bank's portfolio so that extrapolation can be performed with confidence. If, for instance, a particular legal entity appears materially under-represented in the sample, then the NCA may remedy this whilst ensuring the selection remains random.
- This approach is consistent with standards on auditing.

The remainder of this section provides:

- Basis for this methodology on the standards of audit;
- Indicative timeline
- Illustrative models, parameter sheets and templates
- Explanation of how the sample is selected;
- Explanation of how the parameters have been calibrated to minimise the audit error; and
- Description of how the results of the sampling selection will be reported.

3.2 BASIS IN STANDARDS ON AUDITING

Standards on auditing from the *International Federation of Accountants* ("IFAC"), namely *International Standards on Auditing* ("ISA"), have been taken into account. In particular, the following are relevant considerations, summarised below:

ISA 530, A4	*Audit sampling enables the auditor to obtain and evaluate audit evidence about some characteristic of the items selected in order to form or assist in forming a conclusion concerning the population from which the sample is drawn. Audit sampling can be applied using either non-statistical or statistical sampling approaches.*

- Auditing a sample is an acceptable technique to draw conclusions about a population; and
- Both statistical and non-statistical sampling approaches can be applied.

ISA 530, A10	*The level of sampling risk that the auditor is willing to accept affects the sample size required. The lower the risk the auditor is willing to accept, the greater the sample size will need to be.*

- Acceptable level of sampling risk has to be defined; and
- Sample size has to be defined in light of the acceptable sampling risk.

ISA 530, A12	*With statistical sampling, sample items are selected in a way that each sampling unit has a known probability of being selected. With non-statistical sampling, judgment is used to select sample items. Because the purpose of sampling is to provide a reasonable basis for the auditor to draw conclusions about the population from which the sample is selected, it is important that the auditor selects a representative sample, so that bias is avoided, by choosing sample items which have characteristics typical of the population.*

- The sample has to be representative and unbiased; and
- If statistical sampling is applied, this is ensured through the use of random sampling.

ISA 530, Appendix 1, Para 1	*Audit efficiency may be improved if the auditor stratifies a population by dividing it into discrete sub-populations which have an identifying characteristic. The objective of stratification is to reduce the variability of items within each stratum and therefore allow sample size to be reduced without increasing sampling risk.*

- Stratification may be used to increase the feasibility and credibility ("*improve efficiency*") of the exercise.

ISA 530, Appendix 1, Para 2	*When performing tests of details, the population is often stratified by monetary value. This allows greater audit effort to be directed to the larger value items, as these items may contain the greatest potential misstatement in terms of overstatement. Similarly, a population may be stratified according to a particular characteristic that indicates a higher risk of misstatement, for example, when testing the allowance for doubtful accounts in the valuation of accounts receivable, balances may be stratified by age.*

- Exposure size and riskiness are often the stratification criteria.

Additional standards have been taken into account, in particular:

- ISA 200 – Overall objectives of the independent auditor and the conduct of an audit in accordance with International Standards on Auditing;
- ISA 315 – Identifying and assessing the risks of material misstatement through understanding the entity and its environment;
- ISA 320 – Materiality in planning and performing an audit;
- ISA 330 – The auditor's responses to assessed risks;
- ISA 450 – Evaluation of misstatements identified during the audit; and
- ISA 500 – Audit evidence.

3.3 INDICATIVE TIMELINE – NCA BANK TEAMS MAY BEGIN THE PROCESS BEFORE THESE TIMELINES.

Table 23 below summarises the activities that are encompassed in the sampling process, with tentative timeframes. NCA bank teams may begin the process before these timelines.

Table 23 Indicative timeline for sampling	
Task	**Indicative date**[17]
Preparation of the required scripts and tools based on the rules and examples provided by the CPMO	28 March 2014
Complete selection of the priority debtors	28 March 2014
Preparation of the in-scope portfolios by: • Excluding from the loan tape the portfolios that have not been selected • Excluding also those assets that will not be reviewed from the in-scope portfolios • Applying the stratification criteria	28 March 2014
Calculation of sample sizes	28 March 2014
Completion and submission of interim versions of the templates: • Portfolio sampling profile • Sampling results report Trouble shooting of issues e.g. unexpectedly large samples	28 March 2014
Designation of samples randomly selecting debtors	31 March 2014
Quality assurance of the samples selected by NCA bank teams and recommendation of actions	1 April 2014
Implementation of recommendations from QA&TAT (if any)	18 April 2014
Review of the adequacy of the selection based on the conclusions from the data integrity validation	18 April 2014
Completion and submission of final versions of the template	**18 April 2014**

3.4 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 24 Illustrative models for sampling	
Subject	**Illustrative model/parameter sheet**
Sampling example tool	Step-by-step example of sample size calculation process and simulation of the findings projection
Sampling rates	Parameter sheet for determining sampling rates

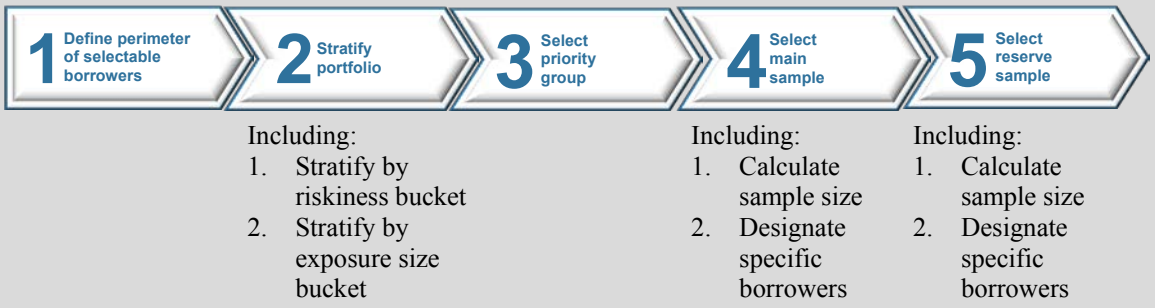
[17] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones.

Table 25 Templates for sampling		
Template	**Summary of contents**	**Frequency of submission to CPMO**
T3. Sampling rates template	Tool to determine sampling rates for each portfolio stratum	Interim update 2 weeks into sampling Final update 2 days after completion of DIV

3.5 APPROACH TO SELECTING THE SAMPLE

The approach to selecting the sample consists of five steps, as illustrated in the figure below. These steps are not necessarily consecutive, as the NCA bank team may decide, for instance, to prepare all the scripts and tools in advance. The remainder of this subsection describes the approach for each of the steps.

Figure 4 Steps to selecting the sample



Note: Where a portfolio spans several booking entities, typically a single sample would be selected and results would be projected across all in scope booking entities. This requires a representative sample to be chosen, which proportionally represents the range of legal entities. NCAs should take this into account when selecting the sample. It is unlikely that the sample will be proportionally representative in each stratum, though, in aggregate the sample should contain a satisfactory mix of exposures across the relevant legal entities. It is important to note however that the sample will not reflect the average mix of the respective legal entities given the skewed nature of the sample by size and risk. If the sample is judged not to be representative, the NCA bank team may reselect the sample until it is representative, whilst maintaining the random nature of the selection.

3.5.1 STEP 1 – DEFINE PERIMETER OF SELECTABLE DEBTORS

Some parts of each portfolio will be excluded from sampling (and therefore projection of findings). The exclusions are:

1. Retail exposures other than retail mortgages (i.e. retail SMEs and retail others) – These exposures will be reviewed through the collective provisioning review (see Section 7 below on the collective provisioning review)[18];

[18] Also retail mortgages shall be assessed through the collective provisioning review; however critical inputs for the calibration of the collective provisioning parameters shall be sourced through the review of files and collaterals.

2. Portfolios that have not been selected for Phase 2;
3. Individual debtors from selected portfolios that are externally rated and this rating is better than an ECAI Credit Quality Step 4, as defined in the loan tape descriptive Excel –The risk of material misstatements is negligible;
4. Corporates with both Debt/EBITDA < 1 and Equity/Assets > 50% based on audited accounts that are less than 12 months old;
5. Debtors that have been 95% provisioned or more.

3.5.1.1 Calculation approach

Loan tape data is provided in three different views: debtor view, facility view and collateral view; as described in Section 0. This subsection outlines how these three views have to be combined to prepare the sampling dataset, which is defined at the debtor level and aggregates up past due and LTV. For the avoidance of doubt, each debtor represents one line in the sampling database, except for retail exposures in which each facility represents one line in the sampling database.

The first task is to prepare the sampling dataset, which contains the fields described in the following Table for each debtor (or facility for RRE). As the loan tape for RRE is collected at the facility level, throughout the description of the sampling process in this Chapter, "debtor" should be read as "facility" for RRE.

Table 26 List of fields of the sampling dataset	
Field name	**Description**
Portfolio	Field S_AQRSD/S_AQRASF (AQR asset segment) and R_GEOGD/R_GEOGF (Geography)
Debtor ID	Field R_IDFD (Debtor internal ID) from the debtor view for non-retail. This field is the unique ID of the dataset, which entails that no duplicate *Debtor ID*s should be contained. For RRE this should be the concatenation of the facility and debtor ID (R_IDFF, R_IDFD)
Client connection ID	Field R_INTIDC (Internal ID for the group of connected clients) from the debtor view (non-retail only)
Exposure	Aggregated exposure of the debtor as defined in Section 2.5.1 for non-retail (D_EXP), considering the fields E_ONBAL (On balance facility exposure), E_OFFBAL (Off balance facility exposure) and E_CCF (Credit conversion factor) from the facility view. For RRE this is F_EXP
External rating	Field R_CREDQ (Credit quality step) from the debtor view (non-retail only)
Related party	1 if the field R_RELATD (Identification if the debtor is a related party) from debtor view is YES, 0 if it is NO (non-retail only)
Debt/EBITDA	Ratio between the fields B_DEBT (Total Debt) and B_EBITDA (Total EBITDA) from the debtor view (non-retail only)
Equity/Assets	Ratio between the fields B_EQ (Total Equity) and B_ASSET (Total Assets) from the debtor view (non-retail only)
NPE	NPE according to EBA simplified definition S_NPEEBA
Internal NPE	NPE according to internal definition S_NPEINT)
Months past due	For RRE calculated from number of days past due (D_DPD) For non-retail, number of months past due calculated for the debtor as the worst past due status of all exposures (subject to local materiality thresholds) At the debtor level, the worst case for any product is taken. (D_DAYPD as defined in Section 2.5.1)
NPE in the last 12 months	Has the debtor/facility been NPE in the last 12 months according to the EBA simplified definition (S_NPE12M))
Watch list	Y if any of the facilities associated with a debtor are Watch list (S_WATCH) = Y at a consolidated level and N if it is N. (D_WATCH as defined in Section 2.5.1) (Non-retail only)
Impaired	1 if the debtor/facility has a specific impairment. (P_PROVD/P_PROVF = Specific (IS/CS))
Forborne	For non-retail Y if any of the facilities associated with a debtor is considered forborne for the purposes of ECB threshold impairment triggers (D_FOR as defined in Section 2.5.1)[19]. For RRE this is taken at the facility level

[19] Notwithstanding that the EBA definition of reported forborne loans is performed at the exposure level, the ECB threshold for impairment trigger are applied at the debtor level. Therefore a rule must be applied for applying an exposure level forbearance flag at the debtor level. The approach described has therefore been applied.

Table 26	List of fields of the sampling dataset
Provisions	Aggregated provisions for the debtor/facility, considering fields P_SPECPR (Specific allowances –provisions) and P_IBNR (Collective allowances for incurred but not reported losses) as outlined in Section 2.5.1
LTV	D_LTV or F_LTV as defined in Section 2.5.1)

The third task is to exclude from the collated dataset the portfolios and debtors that are not subject to credit file review:

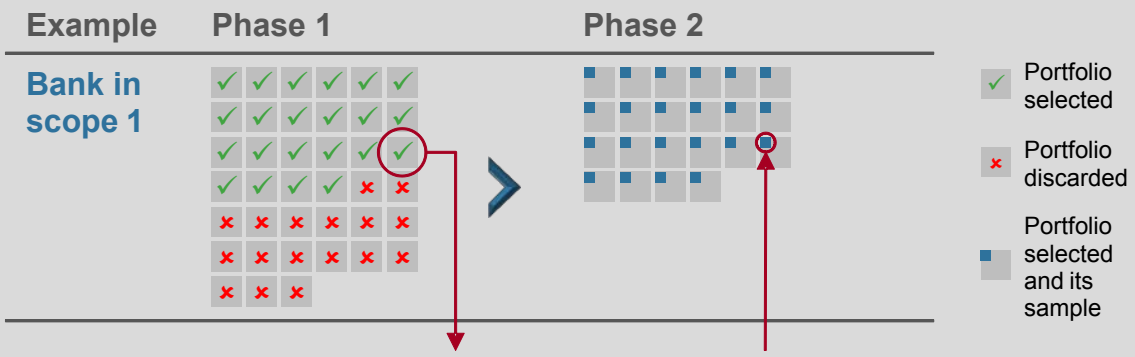
- Portfolio is not among the portfolios selected during Phase 1;
- Portfolio = Retail SME;
- Portfolio = Other retail;
- CQS better than 4;
- Both Debt/EBITDA<1 and Equity/Assets>50%;
- Provisions > 95% of Debtor exposure.

The general convention about how to treat missing values applies to this dataset: "not applicable" will be designated as "N/A" for text and "11111111111" for numeric fields; whereas "missing information" will be designated as "MISS" for text and "99999999999" for numeric fields.

3.5.2 STEP 2 – STRATIFY PORTFOLIO

Every portfolio will be split into strata. This stratification enables a manageable sample size, while maintaining high standards of accuracy and representativeness of the sample. Stratification will be based upon the criteria of exposure size and riskiness. Figure 5 below illustrates how each portfolio is divided into strata and how the stratified sample is selected. Matrix numbers represent the percentage of observations selected from each bucket, from an example large corporate portfolio.

Figure 5 Illustrative example of how the stratified sample is done for each portfolio



	5th Pctl.	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	0%	0%	15%	46%	80%	100%	100%
Default >6m	0%	0%	20%	54%	77%	100%	100%
Default <6m	0%	0%	41%	100%	100%	100%	100%
High risk cured	0%	0%	12%	30%	67%	70%	100%
High risk normal	0%	0.02%	15%	100%	100%	100%	100%
Normal cured	0%	0.24%	13%	28%	70%	100%	100%
Normal	0%	0.01%	8%	24%	47%	100%	100%

3.5.2.1 Step 2.1 – Stratify by riskiness buckets

Riskiness buckets (vertical axis of the Figure 5 above) are defined using basic definitions that all significant banks should be able to provide in their loan tape (see Section 2.4), such as past due status etc. To simplify this distinction, forward looking criteria – such as PD – have been avoided. The specific definitions are:

- *Default more than 12 months*: Is and has been non-performing with days past due more than 12 months (internal or EBA definition).
- *Default more than six months but less than 12 months*: Is and has been non-performing with days past due of more than six months but less than 12 (internal or EBA definition);
- *Default less than six months:* Is and has been non-performing with days past due of less than six months (internal or EBA definition);
- *High- risk cured:* Was NPE less than 12 months ago (internal or EBA definition), and currently shows any of the potential deterioration signs referred to below;
- *High risk:* Has not been non-performing for the last 12 months, but currently shows one of the signs of potential deterioration defined in Table 28;
- *Normal cured:* Currently has none of the high risk signs, but has been non-performing less than 12 months ago (internal or EBA definition);

- *Normal:* Currently has none of the high risk signs, and has not been non-performing for the last 12 months, at least;

Note: Past due definitions should respect local definition of materiality as per Article 178 of CRR.

Data required

The basis for the stratification is the sampling dataset, as per the section above. The fields required are listed in the table below.

Table 27 List of fields from the sampling dataset required for stratifying by riskiness

Field name	Description
Portfolio	Portfolio of each debtor/facility
Debtor ID	Debtor unique ID (non-retail), concatenation of facility and debtor ID for RRE
Related party	Whether or not the debtor is a related client of the bank, as defined in the section 3 about loan tape, above
Debt/EBITDA	Ratio between total debt and total EBITDA, as an indicator of the debt service capacity of the debtor
NPE	Status according to the AQR definition
Internal NPE	Status according to the internal definition of the bank
Days past due	Number of days past due for the debtor (facility for RRE)
NPE in the last 12 months	Flag of whether the debtor (facility for RRE) has been non-performing in the last 12 months
Watch list	F1ag of whether the debtor (facility for RRE) is within the Watch list of the bank
Forborne	F1ag of whether the debtor (facility for RRE) is forborne
LTV	Loan to Value ratio, obtained as the aggregated exposures of all of the loans of the debtor divided by the aggregated committed value of all the assets that are provided as collaterals for those loans

Parameters required

Riskiness buckets will be defined through the combination of three flags: *Current status flag, Time in default* and *Cured*:

Table 28	Definition of stratification variables	
Parameter	**Value**	**Conditions**
Current status flag	Default	• NPE = NP; • OR Internal NPE = NP; • OR Impaired = 1. Note that this might be a sign of a data integrity issue, as it should be marked as non-performing.
	High risk	• NPE = PE; • AND Internal NPE = PE; • AND either of the following applies: – Related party = Y; – Debt/EBITDA > 6 (Corporate excluding project finance, CRE, shipping and aviation); – Days past due > 15. Note that Days past due > 90 in this case might be a sign of a data integrity issue, as it should be marked as non-performing; – Watch list = Y; – Loan/income >500% for retail mortgage (where available); – Forborne = Y.
	Normal	• Otherwise.
Time in default	More than 12 months	• Current status flag = *Default*; • AND Months past due > 12.
	6 to 12 months	• Current status flag = *Default*; • AND Months past due ≤ 12; • AND Months past due > 6.
	Less than 6 months	• Current status flag = *Default*; • AND Months past due ≤ 6.
Cured	1	• Current status flag ≠ *Default*; • AND *NPE in the last 12 months* = 1 (As per the rules described in Step 1 above).
	0	• Current status flag ≠ *Default*; • AND *NPE in the last 12 months* = 0 (As per the rules described in Step 1 above).

Calculation approach

To calculate the riskiness buckets, the parameters above have to be simply combined:

- Default more than 12 months when:
  - Current status flag = Default;
  - And Time in default = More than 12 months;
  - And Cured = N/A;
- Default less than 12 months when:
  - Current status flag = Default;

- And Time in default = six to 12 months;
- And Cured = N/A.

- Default less than 6 months when:
  - Current status flag = Default;
  - And Time in default = Less than six months;
  - And Cured = N/A.
- High-risk cured when:
  - Current status flag = High Risk;
  - And Time in default = N/A;
  - And Cured = 1.
- High risk when:
  - Current status flag = High Risk;
  - And Time in default = N/A;
  - And Cured = 0.
- Normal cured when:
  - Current status flag = Normal;
  - And Time in default = N/A;
  - And Cured = 1.
- Normal when:
  - Current status flag = Normal;
  - And Time in default = N/A;
  - And Cured = 0.

3.5.2.2 Step 2.2 – Stratify by exposure size buckets

Exposure size buckets (horizontal axis of the Figure 5 above) are defined in three steps:

- Top ten debtors by exposure size of each portfolio and risk bucket are sampled;
- Smallest exposures (i.e. less than 5th percentile[20]) are excluded from the analysis on the basis of the immateriality of the potential adjustment;

[20] 5% smallest exposures (based on total number of debtors in the portfolio) ordered by exposure size.

- The range between the tenth debtor by exposure size and the 5th percentile (5% smallest exposures (based on total number of debtors) ordered by exposure size) is split into five buckets of the same absolute difference in exposure.

Data required

The basis for the stratification is the sampling dataset, as per the sections above. The fields required are listed in the table below.

Table 29 List of fields from the sampling dataset required to stratify by exposure size

Field name	Description
Portfolio	Portfolio of each debtor (facility for RRE)
Debtor ID	Debtor unique ID (concatenation of facility and debtor ID for RRE)
Exposure	Aggregated exposure of all of the loans of the same debtor (exposure per facility for RRE)
Riskiness bucket	Riskiness bucket as defined in the section above: • Default more than 12 months; • Default less than 12 months; • Default less than 6 months; • High-risk cured; • High risk; • Normal cured; • Normal.

Parameters required

For clarity:

- A Stratum is a sub-segment of the portfolio with similar exposure size and risk classification – i.e. normal risk, exposure size bucket 1 would be an example of a Stratum
- Strata is the plural of Stratum
- A Common Risk Strata is a group of Stratum with different levels of exposures but the same risk characteristics – i.e. normal risk, exposure size bucket 1 and normal risk, exposure size bucket 2 would both be in a Common Risk Strata
- A Common Exposure Strata is a group of sub-segments with different levels of risk but the same exposure characteristics – i.e. normal risk, exposure size bucket 1 and normal cure risk, exposure size bucket 1 would both be in a Common Exposure Strata

Exposure size buckets will be defined through the comparison of the *Exposure* for each debtor and a number of exposure cut-off points:

- 5^{th} Percentile;
- Cut-off$_1$;
- Cut-off$_2$;
- Cut-off$_3$;
- Cut-off$_4$;
- Top10^{th} Exposure.

These cut-offs are specific to each portfolio and riskiness buckets, meaning that, for instance, cut-off points for retail mortgages normal will be different from cut-off points for retail mortgages defaulted >12 months and different from large corporates defaulted >12 months. The steps to calculate them are explained below and illustrated in the Figure 6:

1. Calculate the 5th Percentile of exposure (by debtor) for each portfolio and riskiness bucket i.e. determine the exposure of the debtor which has an exposure smaller than 95% of the other debtors in the same Common Risk Strata.);
2. Identify the exposure size of the Top 10th debtor by exposure size in each Common Risk Strata;
3. Calculate the auxiliary variable "Step" as:
4. $\text{Step} = \frac{\text{Top}10^{th}\ \text{Exposure} - 5^{th}\text{Percentile}}{5}$
5. For i = 1 to 4, calculate Cut-offi as: *Cut offi = 5th percentile + (Step xi)*

Figure 6 Cut-off points used for stratification of an example large corporate portfolio (by bucket)

Exposure (€) of the cut off values for each bucket						
Riskiness bucket	**5th Percentile**	**1**	**2**	**3**	**4**	**5 (Top 10th exposure)**
Default >12m	0	2,424,867	4,849,735	7,274,602	9,699,469	12,124,336
Default >6m	49	1,972,206	3,944,363	5,916,520	7,888,677	9,860,834
Default <6m	71	2,937,371	5,874,671	8,811,971	11,749,271	14,686,571
Higher-risk Cured	14,403	4,749,691	9,484,979	14,220,266	18,955,554	23,690,842
Higher-risk Normal	20	8,788,538	17,577,057	26,365,575	35,154,093	43,942,611
Normal Cured	47,474	3,569,819	7,092,164	10,614,510	14,136,855	17,659,200
Normal Normal	8	47,437,959	94,875,909	142,313,860	189,751,811	237,189,761

Calculation approach

Once the parameters are calculated, each debtor is allocated to the corresponding exposure size bucket:

- Exposure size bucket = Top10 when Top10th Exposure ≤ Exposure;
- Exposure size bucket = 5 when Cut-off$_4$ ≤ Exposure < Top10th Exposure;
- Exposure size bucket = 4 when Cut-off$_3$ ≤ Exposure < Cut-off$_4$;
- …
- Exposure size bucket = 1 when 5th Percentile < Exposure < Cut-off$_1$;
- Exposure size bucket = 5th Percentile when Exposure ≤ 5th Percentile;

Figure 7 Number of debtors allocated to each stratum of an example large corporate portfolio

Number of borrowers within each stratum							
	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	32	541	26	10	2	1	10
Default >6m	14	213	24	10	3	4	10
Default <6m	21	333	24	9	5	3	10
High risk cured	11	160	13	4	4	5	10
High risk normal	191	3,570	17	10	5	1	10
Normal cured	16	229	30	5	9	4	10
Normal	788	14,928	24	7	4	-	10

3.5.3 STEP 3 – SELECT THE PRIORITY DEBTORS

In order to anticipate the beginning of the credit file review, the "priority debtors" will be selected. This will consist of the top 10 debtors (top 5 for small granular non-retail portfolios) by exposure size per portfolio and riskiness bucket. Picking these files should be relatively straight forward, allowing credit file review to begin swiftly on completion of the loan tape. If the 10th and 11th debtor are strictly identical by exposure then lowest allocated value of collateral can be used to select which debtor to go into the priority debtors. If allocated collateral is equal then a random choice should be made.

At NCA discretion, in addition to the top 10 debtors, all debtors within the top 20 groups of connected clients (across all selected portfolios, not by portfolio/riskiness bucket) can be selected as an additional priority group, to the extent they have not already been analysed. NCAs will decide at the beginning of this step if they wish to pursue this option.

3.5.3.1 Data required

The basis for the selection of the priority debtors is the sampling dataset, as per the sections above. The fields required are listed in the table below.

Table 30	List of fields from the sampling dataset required to select the priority debtors

Field name	Description
Portfolio	Portfolio of each debtor
Debtor ID	Debtor unique ID (concatenation of facility and debtor ID for RRE)
Exposure	Aggregated exposure of all of the loans of the same debtor (facility)
Riskiness bucket	Riskiness bucket as defined in the section above • Default more than 12 months • Default less than 12 months • Default less than 6 months • High risk cured • High risk • Normal cured • Normal
Exposure size bucket	Exposure size bucket as defined in the section above • 5th Percentile • Bucket 1 • Bucket 2 • Bucket 3 • Bucket 4 • Bucket 5 • Top10

3.5.3.2 Calculation approach

The selection of the priority debtors is as easy as picking the debtors that have been allocated to the Top10 exposure size bucket for all the portfolios and riskiness buckets. For the avoidance of doubt, this means that 70 debtors will be selected per portfolio (10 per riskiness bucket), though some debtors may belong to the same group of connected clients, and therefore be analysed together. In these circumstances, no extra priority debtors should be selected.

3.5.4 STEP 4 – SELECT RANDOM STRATIFIED SAMPLE

The stratification of the portfolios enables sufficient audit evidence with only a few observations per stratum. This section outlines how the number of observations per stratum is defined and how individual debtors will be picked once the sample size has been calculated.

3.5.4.1 Step 4.1 – Calculate sample size

Not all of the strata will be sampled. In general, small exposures will not be reviewed and in the case of retail mortgage portfolios, for those debtors that do not show any evidence of current or

past reasons for potential impairment, only the largest exposures will be reviewed. This is illustrated in Figure 8 and Figure 9 below.

Figure 8 Strata subject to scrutiny for non-retail portfolios

	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	NO	YES	YES	YES	YES	YES	YES
Default >6m	NO	YES	YES	YES	YES	YES	YES
Default <6m	NO	YES	YES	YES	YES	YES	YES
High risk cured	NO	YES	YES	YES	YES	YES	YES
High risk normal	NO	YES	YES	YES	YES	YES	YES
Normal cured	NO	YES	YES	YES	YES	YES	YES
Normal	NO	YES	YES	YES	YES	YES	YES

Figure 9 Strata subject to scrutiny for residential real estate portfolios

	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	NO	YES	YES	YES	YES	YES	YES
Default >6m	NO	YES	YES	YES	YES	YES	YES
Default <6m	NO	YES	YES	YES	YES	YES	YES
High risk cured	NO	YES	YES	YES	YES	YES	YES
High risk normal	NO	YES	YES	YES	YES	YES	YES
Normal cured	NO	YES	YES	YES	YES	YES	YES
Normal	NO	NO	NO	NO	NO	NO	YES

The number of files sampled per stratum is defined based on the following factors:

- The risk category of the stratum;
- The AQR asset segment (residential real estate (RRE) vs. non-retail);
- Whether the portfolio is granular or not (i.e. has more than 1,000 individual debtors);
- The size of the portfolio;
- The number of debtors in the stratum.

Data required

The basis for the calculation of the sample size is the sampling dataset, as per the sections above. The fields required are listed in the table below.

Table 31	List of fields from the sampling dataset required to calculating the sample size

Field name	Description
Portfolio	Portfolio of each debtor (facility for RRE)
Debtor ID	Debtor unique ID (concatenation of facility and debtor ID for RRE)
Exposure	Aggregated exposure of all of the loans of the same debtor (exposure of the facility for RRE)
Riskiness bucket	Riskiness bucket as defined in the section above • Default more than 12 months • Default less than 12 months • Default less than 6 months • High risk cured • High risk • Normal cured • Normal
Exposure size bucket	Exposure size bucket as defined in the section above • 5th Percentile • Bucket 1 • Bucket 2 • Bucket 3 • Bucket 4 • Bucket 5 • Top10

Parameters required

The parameters required to determine the statistical sufficiency of the sample are provided by the CPMO. The parameters are shown in the Table below.

Table 32 Statistical sufficiency parameters table provided by CPMO

	Retail mortgage			Small, concentrated non-retail		Non-retail granular (more than 1,000 debtors)		Non-retail non-granular (fewer than 1,000 debtors)	
Number of obs in stratum	Normal Normal	High Risk, High Risk cured and Normal cured	NPE	Not NPE	NPE	Not NPE	NPE	Not NPE	NPE
1	N/A	1	1	1	1	1	1	1	1
2	N/A	2	2	2	2	2	2	2	2
3	N/A	3	3	3	3	3	3	3	3
4	N/A	4	4	4	4	4	4	4	4
5	N/A	5	4	4	4	4	5	5	5
6	N/A	5	5	4	4	5	5	5	6
7	N/A	6	5	4	4	6	6	6	7
8	N/A	7	5	4	4	6	7	7	7
9	N/A	8	5	4	4	7	8	8	8
10	N/A	8	5	4	4	7	8	8	9
11	N/A	9	5	4	4	8	9	9	10
12	N/A	10	5	4	4	8	10	10	11
13	N/A	10	5	4	4	8	10	10	12
14	N/A	11	5	4	4	8	11	11	12
15	N/A	12	5	4	4	8	12	12	13
16	N/A	12	5	4	4	8	12	12	14
17	N/A	13	5	4	4	8	13	13	14
18-62	N/A	13	5	4	4	8	13	13	15
63-83	N/A	13	5	4	4	8	13	13	17
84-120	N/A	13	5	4	4	8	13	13	18
121-200	N/A	13	5	4	4	8	13	13	19
201+	N/A	13	5	4	4	8	13	13	20

NCA bank teams may apply the parameters for small concentrated non-retail portfolios when: The total RWA of the portfolio is less than 5% of the total credit RWA of the bank and the top 50 debtors account for at least 40% of the total exposure in the portfolio. NCA bank teams may petition to apply the parameters where the total RWA of the portfolio is between 5 and 10% of the total credit RWA of the bank and the top 50 debtors account for at least 40% of the total exposure in the portfolio where the number of files selected for the bank is greater than the expected number of files communicated by the CPMO at the end of Phase 1.The following subsection explains how these parameters are applied.

Calculation approach

The first step in the calculation is to allocate exposure and number of debtors (after exclusions) by stratum, as illustrated in the following figure.

Figure 10 Summary tables of number of debtors and aggregated exposure per stratum for an example large corporate portfolio (with exclusions e.g. ECAI CQS>4 removed)

Portfolio	SMEs

Number of borrowers within each stratum

	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	231	4,243	88	28	15	6	10
Default >6m	324	6,039	66	24	13	8	10
Default <6m	243	4,572	32	6	5	2	10
High risk cured	233	4,289	68	27	12	10	10
High risk normal	2,290	43,504	52	7	3	2	10
Normal cured	180	3,309	63	29	10	8	10
Normal	7,460	141,617	104	34	17	16	10

Aggregated exposure per stratum

	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	3,207	373,452,678	100,455,828	53,846,348	42,218,634	23,445,470	89,630,247
Default >6m	4,869	931,469,513	155,516,383	104,090,325	75,876,932	66,087,083	133,138,234
Default <6m	3,795	439,166,069	67,282,686	19,763,502	26,518,830	15,095,635	167,876,129
High risk cured	592,064	612,492,166	132,195,401	94,817,102	59,804,526	73,931,173	377,620,510
High risk normal	12,721	1,838,236,859	188,592,128	43,795,065	27,632,625	23,071,687	293,923,435
Normal cured	547,126	460,123,298	115,696,759	96,583,083	44,843,070	46,552,202	137,078,456
Normal	36,149	9,961,496,905	654,219,870	372,867,738	255,963,350	343,790,195	419,040,771

The number of observations is then looked up for each stratum from the table above. In doing so, the correct set of corporate parameters (granular, non-granular or small and granular) should be looked up, depending on the number of observations in the portfolio after exclusions.

Figure 11 Sample size per stratum for an example large corporate portfolio

Sample size per stratum (expressed in number of borrowers)							
	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	-	13	13	13	12	6	10
Default >6m	-	13	13	13	10	8	10
Default <6m	-	13	13	6	5	2	10
High risk cured	-	8	8	8	8	7	10
High risk normal	-	8	8	7	3	2	10
Normal cured	-	8	8	8	7	8	10
Normal	-	8	8	8	8	8	10

If forbearance information is not available to determine the high risk segment and no conservative proxy is available (as described in section on DIV), the sample size for normal cured and normal should be increased by a factor of 4 (up to the total population of the stratum). For instance, if forbearance/restructuring information is not available for the above example, the revised sample size will be:

Figure 12 Sample size per stratum for an example large corporate portfolio when forbearance information is not available

Sample size per stratum (expressed in number of borrowers)							
	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	-	13	13	13	12	6	10
Default >6m	-	13	13	13	10	8	10
Default <6m	-	13	13	6	5	2	10
High risk cured	-	8	8	8	8	7	10
High risk normal	-	8	8	7	3	2	10
Normal cured	-	32	32	30	10	8	10
Normal	-	32	32	32	17	8	10

Example calculation

An example calculation and output is shown in the example calculation in Excel "Sampling example tool.xlsx".

3.5.4.2 Step 4.2 – Select specific debtors

To ensure that the sample is representative and unbiased, random sampling will be applied to select specific debtors.

Data required

The basis for the selection of specific debtors is the sampling dataset, as per the sections above. The fields required are listed in the Table below.

Table 33 List of fields from the sampling dataset required to designate specific debtors for the sample

Field name	Description
Portfolio	Portfolio of each debtor (facility for RRE)
Debtor ID	Debtor unique ID (concatenation of facility and debtor ID for RRE)
Exposure	Aggregated exposure to the debtor (exposure of the facility for RRE)
Riskiness bucket	Riskiness bucket as defined in the section above • Default more than 12 months • Default less than 12 months • Default less than 6 months • High risk cured • High risk • Normal cured • Normal
Exposure size bucket	Exposure size bucket as defined in the section above • 5th Percentile • Bucket 1 • Bucket 2 • Bucket 3 • Bucket 4 • Bucket 5 • Top10

Calculation approach

The approach to select specific debtors is:

1. Ensure that the portfolio follows a random order by assigning a randomly generated number[21] (e.g. SAS' ranuni(seed)) to each debtor and sorting in descending order;
2. Starting with the first debtor in the randomly sorted list, select the first "n" debtors, for each stratum where "n" is the total sample size for each stratum described in the previous section.

Alternatively, typical data management software offers solutions to run stratified samples easily (e.g. SAS' PROC SURVEYSELECT combined with the statement "strata"). The NCA bank team may use these solutions as long as the randomness of the selection is ensured.

[21] ISA 530, Appendix 4, Paragraph a: *"Random selection (applied through random number generators, for example, random number tables)."*

Experience suggests that some parties can struggle to select samples randomly. Therefore following selection of the sample, the party responsible for selecting the sample should sign a declaration that appropriate measures have been taken to ensure the sample is random and the NCA should ensure the sample selection process has been Quality Assured.

3.5.5 STEP 5 – SELECT THE RESERVE SAMPLE

Together with the main sample, the NCA bank team will select a reserve sample. Its purpose is allowing the replacement of files under very precise circumstances, explained in Section 4.4 and Chapter 6 and to check anomalies in the projection of findings phase. This section outlines how the reserve sample is selected while preserving all the attributes defined for the main sample, such as representativeness, non-bias, sufficiency, etc.

3.5.5.1 Step 5.1 – Calculate the sample size for the reserve sample

The calculation of the reserve sample size is a parallel step to the calculation of the main sample size. The data required is the same as for the main sample and that the reserve sample will be calculated right after the main sample size has been calculated.

Calculation approach

The reserve sample, when combined with actual sample can never be more than the total number of debtors in the stratum. Given "N" debtors per strata and a main sample size of "n*", the reserve sample size is calculated using the following expression:

- $R = min(n^*, N - n^*)$

Figure 13 below illustrates the reserve sample size for the example large corporate portfolio.

Figure 13 Reserve sample for an example large corporate portfolio

Reserve sample size per stratum (expressed in number of borrowers)							
	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	-	13	13	13	3		
Default >6m	-	13	13	11	3		
Default <6m	-	13	13				
High risk cured	-	8	8	8	4	3	
High risk normal	-	8	8				
Normal cured	-	8	8	8	3		
Normal	-	8	8	8	8		

3.5.5.2 Step 5.2 – Designate specific debtors for the reserve sample

The selection of the specific reserve sample debtors will be carried out after the selection of the main sample. The required dataset is therefore the same, excluding those files that have been already selected, and the approach is also the same as described above.

3.6 TOLERANCE FOR AUDIT ERROR AND CALIBRATION OF PARAMETERS

This section outlines the target confidence level with which the applicable parameters were calibrated and provides a demonstration of their fitness for purpose. This demonstration is in reality an Excel tool that can be adjusted, so that the confidence level can be tested for different portfolios and under different hypothesis of severity of the adjustments derived from the audit process. NCA bank teams may test different cases in order to familiarise themselves with the concepts behind the methodology.

3.6.1 ILLUSTRATION OF THE TARGET SAMPLING ERROR (5% ERROR BOUND WITH 90% CONFIDENCE LEVEL)

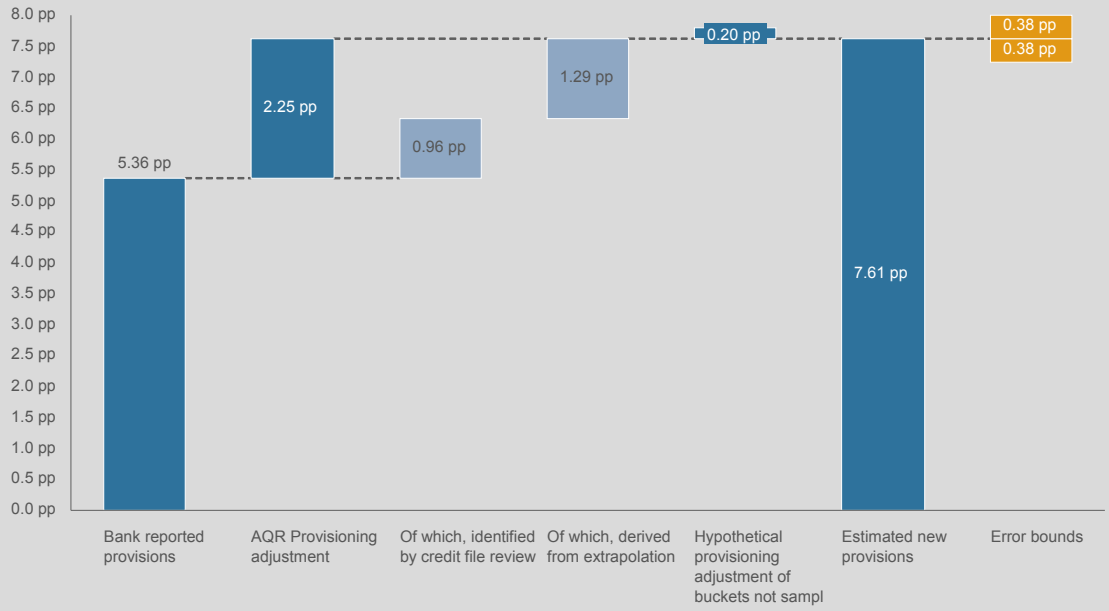
Audit risks[22] should be minimised during any audit exercise. In the AQR, non-sampling risk will be minimised thanks to NCA bank teams' adherence to the highest professional standards. Sampling risk has been mitigated by performing Monte-Carlo simulation of potential credit file review outcomes under reasonable assumptions around severe, but not extreme findings to determine appropriate sample sizes by stratum.

Sample sizes have been calibrated in order to ensure, with a 90% level of confidence a sampling error at a portfolio level that is 5% or less of the post-adjustment provisions if findings are extrapolated linearly across strata. In fact this 'blind' projection of findings will not be performed and therefore the actual error at a portfolio level post-projection of findings should be lower – particularly in terms of overestimation of post adjustment provisions– this is described further in section 6.6 on the projection of findings of the credit file review. Furthermore at a bank level the sampling error will be smaller as errors will diversify.

Figure 14 below illustrates an example portfolio in which, with a 90% confidence (or level of assurance in terms of audit standards), sampling error in the provisioning adjustment is less than or equal to 0.38 pp.

[22] ISA 200, A32: *"Audit risk is a function of the risks of material misstatement and detection risk. The assessment of risks is based on audit procedures to obtain information necessary for that purpose and evidence obtained throughout the audit. The assessment of risks is a matter of professional judgment, rather than a matter capable of precise measurement."*

Figure 14 Illustrative representation of the meaning of the <5% sampling error: reported and adjusted provisions for a stylised portfolio, in percentage points over total exposure



Note: No projection is applied to portfolios that are not in scope. No projection is applied to strata that were not sampled.

3.6.2 SIMULATION TOOL TO TEST THE FITNESS FOR PURPOSE OF THE APPLICABLE PARAMETERS

With the purpose of illustrating the adequacy of the calibrated parameters, CPMO has prepared and released a simplified version of the simulation tool used during the design phase. This shows how through the application of the sampling approach, the adjustment error lies within the boundaries of tolerable error. The remainder of this section outlines how to run the simulation. The NCA bank teams may test the simulation under different specifications so that they can familiarise themselves with the concepts behind the methodology though this is not essential for the delivery of the exercise – merely to provide a proof of concept for an important element of the approach. It is important to note that it will be possible to set parameters in the model to obtain an error of greater than 5% at 90% confidence level however, NCA bank teams should ensure that the starting provisioning levels, assumed level of provisioning adjustment and portfolio distribution is plausible.

3.6.2.1 Data required

The data required to examine the size of the error, is illustrated in the figure below:

- Number of debtors per strata;

- Aggregated exposure per strata;
- Original provisioning levels per stratum, defined as total provisions/total exposure.

Figure 15 Data required to simulate adjustment error for an example large corporate portfolio

Portfolio attributes

Tables below contain attributes of the portfolio: number of borrowers and aggregated exposure per stratum

Portfolio	Large Corporate

Number of borrowers per strata

Riskiness bucket	5th Percentile	1	2	3	4	5	TOP10
Default >12m	32	541	26	10	2	1	10
Default >6m	14	213	24	10	3	4	10
Default <6m	21	333	24	9	5	3	10
Higher-risk Cured	11	160	13	4	4	5	10
Higher-risk Normal	191	3,570	17	10	5	1	10
Normal Cured	16	229	30	5	9	4	10
Normal Normal	788	14,928	24	7	4	-	10

Aggregated exposure per stratum

Riskiness bucket	5th Percentile	1	2	3	4	5	TOP10
Default >12m	5	159,958,334	87,735,917	56,776,307	18,374,414	11,540,930	348,867,873
Default >6m	305	80,573,126	70,695,951	45,977,123	19,752,949	35,065,471	443,750,819
Default <6m	686	150,418,932	96,372,205	65,000,396	47,843,140	36,310,912	346,969,384
Higher-risk Cured	35,357	189,873,247	94,055,982	44,177,385	65,173,835	103,809,717	377,142,988
Higher-risk Normal	2,014	504,790,648	211,634,750	208,038,380	160,712,253	37,053,597	899,593,278
Normal Cured	306,899	229,577,742	153,592,335	46,310,607	110,527,363	66,071,823	447,406,155
Normal Normal	2,744	13,341,037,536.13	1,516,374,194	753,493,999	644,737,548	-	3,972,482,443

Original provisioning levels

Table below contains the provisioning levels for the pre-adjustment portfolio. It is higher for riskier buckets. Expressed as percentage of total exposure.

	Provisioning level
Default >12m	45%
Default >6m	30%
Default <6m	20%
Higher-risk Cured	15%
Higher-risk Normal	10%
Normal Cured	5%
Normal Normal	1%

3.6.2.2 Parameters required

The simulation tool requires two families of parameters: first, parameters for the determination of the sample size that the user is supposed not to modify, as these are the official parameters. Second, parameters to specify under which assumptions the simulation will run. The user is supposed to modify these at their discretion in order to assess the impact on the adjustment error. These are:

Probability of adjustment

The basic assumption is that the level of provisioning recorded in books is correct, however a number of observations may require adjustment. This percentage represents the ratio between observations that require adjustment and total observations. It is expected to be higher for NPE and high risk debtors.

Figure 16 Example probability of adjustment as one parameter for the simulation of the adjustment error

Probability of adjustment							
	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	50%	50%	50%	50%	50%	50%	50%
Default >6m	50%	50%	50%	50%	50%	50%	50%
Default <6m	50%	50%	50%	50%	50%	50%	50%
High risk cured	20%	20%	20%	20%	20%	20%	20%
High risk normal	20%	20%	20%	20%	20%	20%	20%
Normal cured	10%	10%	10%	10%	10%	10%	10%
Normal	5%	5%	5%	5%	5%	5%	5%

Severity of adjustment

For those observations that require adjustment, the severity represents its magnitude. It is expressed as percentage of the exposure. Therefore, if the provisioning level of an observation is 40%, a severity of adjustment of 40% implies that provisioning level is doubled. In the example illustrated in Figure 17 below, the average severity of adjustment has been set at 10% for all the strata.

Figure 17 Example severity of adjustment as one parameter for the simulation of the adjustment error

Severity of the adjustment							
	5th Percentile	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	TOP10
Default >12m	10%	10%	10%	10%	10%	10%	10%
Default >6m	10%	10%	10%	10%	10%	10%	10%
Default <6m	10%	10%	10%	10%	10%	10%	10%
High risk cured	10%	10%	10%	10%	10%	10%	10%
High risk normal	10%	10%	10%	10%	10%	10%	10%
Normal cured	10%	10%	10%	10%	10%	10%	10%
Normal	10%	10%	10%	10%	10%	10%	10%

It is important that realistic parameters are entered. If probabilities are set to be very high in normal buckets then the error will be larger than 5% at 90% confidence level

3.6.2.3 Calculation and interpretation of outputs

The model is programmed to calculate what the required sample size for the input portfolio is and to simulate the audit of a sample of such a size, in a large number of scenarios.

Once the user has updated the input data and the simulation parameters, the button “Run simulation” of the tab “Summary stats” triggers a macro that computes 10,000 iterations under the same specifications, recalculating the outcome of the sampling every time. For each iteration, the difference between the “deterministic” (probability x severity) adjustment and the simulated average adjustment is calculated and then divided by the total provisioning level. This is the adjustment error. Iteration by iteration this error may or may not lie within the acceptable error bound of 5%.

The model sorts down the 10,000 iterations by adjustment error and calculates what the error is at the 90% confidence levels. If the adjustment error for that observation is less than 5%, it can be ensured, with at least a 90% confidence that the adjustment error lies within the tolerable boundaries.

It is important to note that the potential for overestimation of misstatement is greatly reduced by the additional safeguards introduced into the approach to projection of findings. As such there will be a much lower chance of a 5% overestimation in projection of findings. Depending on portfolio this may be lower than 1%.

An example calculation and output is shown in the attached Excel file "Sampling example.xlsx". The example is provided for information only and is not required to deliver the exercise. The output error estimate for the portfolio data described above is shown below:

Figure 18 Error analysis on example portfolio

Error of projected vs. actual misstatement			
Confidence level	Error in provisions without AQR	Size of error if no projection of findings is performed	Absolute size of error with projection of findings (no safeguards)
85%	-25.0%	-6.9%	3.3%
90%	-25.0%	-6.9%	3.7%
95%	-25.0%	-6.9%	4.5%

As discussed above, the actual error post projection of findings will be greatly reduced by the safeguards introduced into the process.

3.7 OUTPUTS

The objective of this workblock is to select a sample for credit file review that meets minimum audit standards.

The following output will need to be produced for this workblock:

Table 34 Outputs for sampling workblock

Workblock	Output
3. Sampling	Complete T3. Sampling rates template

4 CREDIT FILE REVIEW

This chapter outlines the approach to the credit file review component of the AQR. The detailed credit file review will provide information about misclassification and under/over-provisioning of sampled exposures. Results are used for DIV, projection of findings of credit rile review and, finally, the AQR-adjusted CET1% calculation. Following the summary of the approach, this chapter describes how the NCA bank team will plan and conduct the required tasks. First, required information needs to be collected under the credit file review preparation. Then, impairment/NPE status and exposure classes of exposures are assessed.

The AQR is a prudential exercise, focused on providing the necessary clarity on the banks that will be subject to the ECB's direct supervision. Therefore, for the purposes of the AQR, to ensure consistency of findings across banks, guidance is provided on particular topics as to how to apply the principles in the accounting rules. These represent ECB thresholds used for prudential purposes and as such will expire at the end of the exercise. The AQR should not be seen as an attempt to introduce greater prescription into the accounting rules outside of the existing mechanisms. Banks would not be expected to incorporate into policies, processes or reporting findings from the AQR that relate to a Bank failing to be the right side of the ECB threshold if they are compliant with the relevant accounting principles. However, for prudential purposes they may be required to capitalise for a shortfall relative to the ECB threshold in incremental Pillar 2 capital requirements.

4.1 SUMMARY OF THE APPROACH

- The approach requires the NCA bank team to follow three steps 1) Credit file review data preparation; 2) Review of the classification of the exposure; 3) Review of individual impairment and provisioning. The full credit file review is applicable to the sovereign, institutional and corporate exposures selected in the sampling step. Residential real estate exposures are subject to the classification review (performing exposures only) and collateral value review (all exposures) .
- Credit file review data preparation involves collecting and verifying the completeness of the information necessary to complete the classification review and the individual impairment and provisioning review. Prescribed information will be provided to the NCA bank team by the bank for debtors selected in sampling (and their connected clients) in electronic form including a completed standard Excel template. Information for residential real estate and already impaired sovereign, institutional and corporate exposure will be

passed on to Appraisers as soon as possible[23]. During this process the NCA bank team should monitor the significant bank's progress to ensure data delivery will be completed in a timely fashion. The NCA PMO will be informed regularly of any implications from data collection on timelines.

- **The classification review** covers residential real estate, sovereign, institutional and corporate exposures (as per AQR asset segments)[24] where those exposures were selected during the sampling approach (priority debtors and risk based sample). It involves assessing if the exposure is classified correctly in the significant bank's systems from 5 perspectives: 1) identification of evidence of impairment or provision requirement[25]; 2) NPE classification (according to EBA simplified approach and the bank's internal definition); 3) regulatory exposure class (e.g. exposures secured by mortgages on immovable property); 4) AQR asset segment (as per AQR definitions); 5) related party classification (as per IAS 24(9), e.g. other entities with the same parent as the significant bank). The NCA bank team will review exposures for evidence of impairment based on the minimum impairment triggers provided. Findings will be used to supplement loan tape-wide DIV; ensure an adjusted exposure distribution can be created for the bank to feed into stress testing and to make adjustments to the collective provision challenger model and calculation of PI and LGI parameters for the stress test.
- The **review of individual impairment and provisioning levels** applies only to sovereign, institutional and corporate exposures (as per AQR asset segments)[26] with evidence of impairment/requirement of provision/highly likely future losses and involves analysing the appropriate provision given the status of the debtor[27]. The approach follows the standard present value of cash flows approach for individual provisioning, with some limited prescription. The NCA bank team will first need to decide if provisioning should be based on a 'going concern' approach (i.e. the entity will continue to generate cash flows) or a 'gone concern' approach (i.e. the assets of the company will need to be liquidated). Provisioning levels are set based on the difference between the present value of cash flows and the exposure amount.
- Where the NCA bank team identifies a case, during the classification review, where a loss is more likely than not in the future, but where Loss Event Triggers have not been hit, the NCA Bank team should measure the future loss as for current provisions and record this

[23] For debtors in the sovereign, institutional and corporate AQR segments, revaluation of collateral is only required if there is evidence for impairment or if future losses are highly likely that cannot be recognised.
[24] Including all lower level segments such as project finance or Central Governments and central banks.
[25] For losses on undrawn credit commitments or financial guarantees as covered by IAS 37.
[26] Including all lower level segments such as project finance or Central Governments and central banks.
[27] Residential real estate will undergo the collective provision analysis described in Chapter 7.

loss separately for inclusion in the stress test projection as appropriate. All cases of this sort will need to be discussed with the CPMO to confirm a loss event trigger has not been hit. For the avoidance of doubt if the information to assess whether a loss is more likely than not is not available it cannot be classified as such.

- The NCA bank team will report results in standardised templates to allow: QA; for further use in DIV; projection of findings; and the challenger model parameterisation for collective provisioning. Any material issues found that have a bearing on the bank's capital calculation or provisioning calculation should be noted and the bank asked to produce a remediation plan to address the issues following the comprehensive assessment.
- The NCA bank team should assume for the purposes of planning the exercise that they do not need to explicitly ascertain whether or not there is evidence of fraud on each exposure in the sample. However, if in the process of conducting the exercise described below they find evidence of fraud they should raise this with the NCA and CPMO to determine the appropriate response.
- Where currency conversion is required, the exchange rates used for 31 December 2013 financial reporting will be used

4.2 INDICATIVE TIMELINE

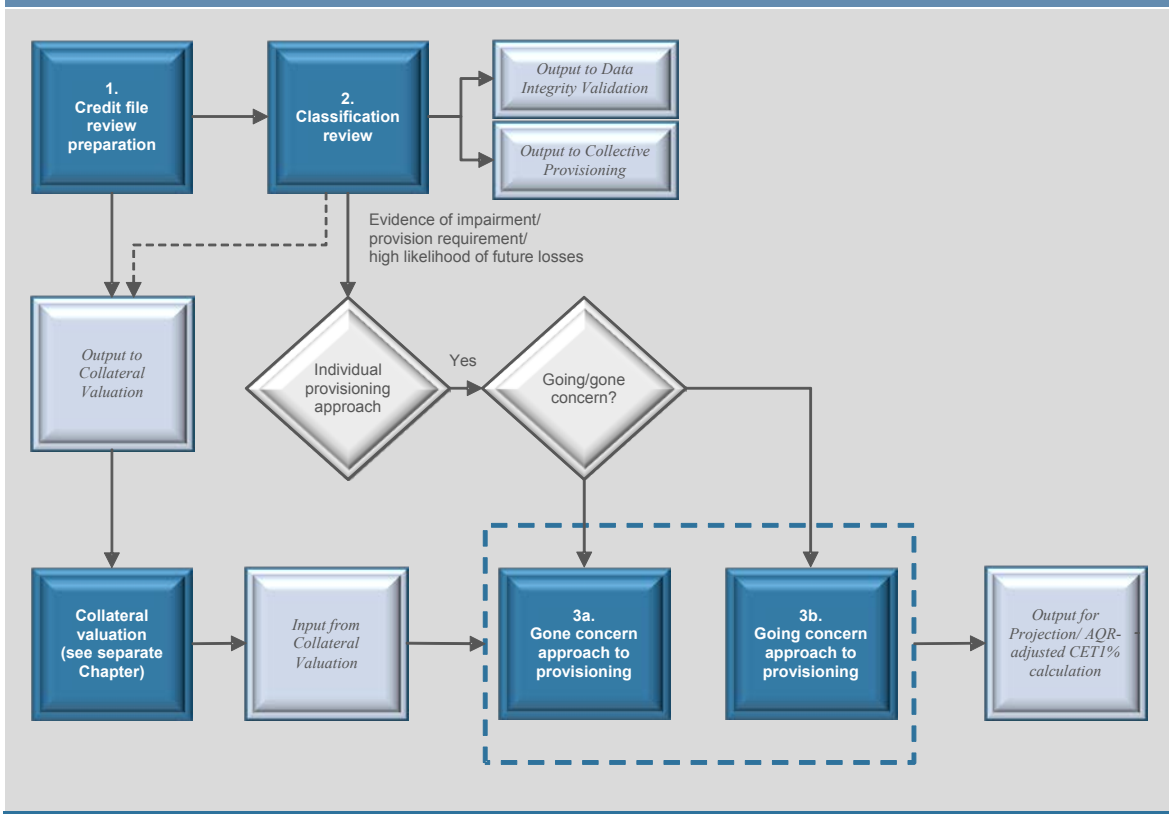
The NCA bank team will set up a realistic project plan for completion of each of the steps and agree timeline with both NCA PMO and significant bank / external appraisers (where dependencies exist).

Table 35 Indicative timeline for the credit file review	
Task	**Date**[28]
1. Credit file review preparation	
First set of credit files available for priority debtors	28 March 2014
Finalise credit files for priority groups	14 April 2014
First set of collateral information passed on to appraisers	28 March 2014
Banks complete submission of credit files	**16 May 2014**
2. Classification review	
Review priority debtors	28 March – 18 April 2014
Review risk based sample	25 April – 6 June 2014
3. Individual impairment review	
Review priority debtors	6 April – 2 May 2014
Review risk based sample	**2 May – 20 June 2014**

The following figure summarises the required work steps for the credit file review.

[28] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones.

Figure 19 Flowchart for the credit file review



While for an individual exposure, the steps need to be followed serially, at an aggregate level, steps can and will be run in parallel. NCA bank teams will plan required progress for each of the three steps (# of files under classification review per week) and take lead times (e.g. credit file collection and collateral review) into account. For instance, turnaround time for collateral revaluation may be two to three weeks therefore collateral revaluation requirements should be identified swiftly and exposures that do not require collateral revaluation should be analysed first. NCA bank teams will then monitor progress in line with the plan and verify planned lead times. Thereby, slow progress areas and data issues can be detected early and resolved.

4.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 36 Parameter sheet for credit file review

Subject	Parameter sheet
Collateral and other macro indices	Parameter sheet for collateral indices and other macro indices

Table 37 Templates for credit file review		
Template	**Summary of contents**	**Frequency of submission to CPMO**
T4A. Credit file review data template	Template for banks to complete with key information on individual debtors that have been sampled (to streamline file analysis process for NCA bank teams)	Not required to be submitted
T4B. Credit file review findings template	Template capturing findings from credit file review for each debtor	Weekly submission of WIP template

4.4 CREDIT FILE REVIEW PREPARATION

It is necessary that NCA bank teams have timely access to the appropriate information of every debtor included in the sample and any associated debtor in the same group of connected clients. This includes but is not limited to information typically stored in the credit file (might be stored in electronic or physical format). Data should be provided with information as of 31 December 2013 for consistency with the loan tape. If this is not possible, current information should be provided.

Four steps are required for each sampled item during the preparation process:

1. Information request by NCA bank teams
2. Information gathering by significant banks, monitored by NCA bank teams
3. Information integrity and completeness check by NCA bank teams
4. Information provision to appraisers by NCA bank teams

The NCA bank team should then inform the significant bank of the Debtor ID's (R_IDFD) that have been selected for review (please refer to Chapter 3 for details on Sampling) and agree on delivery timelines. While sampling is performed on a debtor level, the credit file review requires visibility and analysis of all relevant information and exposures for groups of connected clients. Therefore, the NCA bank team will request all credit files for all Debtor ID's belonging to the same group of connected clients as the sampled Debtor ID that may have a material impact on the assessment of the Debtor. For the avoidance of doubt – the NCA bank team is not required to collect information on all debtors in a group of connected clients – information for debtors that will have no bearing on the assessment of the debtor that was sampled need not be collected.

The significant bank will then need to collect the required information and provide it in a useable form to the NCA bank team which will also involve the completion by the significant bank of data templates to be provided by the CPMO.

Key information NCA bank teams will receive would be (unless legal restrictions apply):

- Bank credit papers (credit mark-ups, lender report);
- Loan application and credit decision;
- Facility offer letter;
- Loan and pledge contracts;
- Financial statements of the company;
- Details of connected accounts;
- Collateral information;
- Collateral appraisal report;
- Agreements relating to guarantees, lien on collateral, etc.;
- Historic account information for the previous 2-3 years, e.g. credit history, ratings history, periodic reviews;
- Details of tax affairs of the debtor;
- Any other information deemed materially relevant by the bank to the credit assessment.

During this process the NCA bank team should monitor the significant bank's progress to ensure data delivery will be completed in a timely fashion. **The NCA bank team will inform the NCA PMO regularly of any implications from data collection for timelines at that point.**

Interviews are an additional means of retrieving information, where NCA bank teams deem those to be relevant (e.g. for larger exposures).

As files arrive, NCA bank teams will verify the integrity of the information provided in the loan tape with the data in the credit file.[29] Before the Classification Review begins, the NCA bank team should ensure that there is sufficient information available to properly review the credit. If there is any missing or wrong data, the significant bank should be contacted to rectify the specific issues. Any deviations from the loan tape should be recorded with the correct values on the credit file review template and a short explanation why the data was wrong. Data-related findings should be incorporated into the final report for DIV (e.g. patterns of misclassification, data issues). All other qualitative findings (such as weaknesses in provisioning processes) should be reported with Template O4B.

NCA bank teams will provide the necessary collateral information for residential real estate and already impaired sovereign, institutional and corporate exposure to appraisers in a timely manner, which may or may not be a team within the NCA bank team or a different third party.

[29] The NCA bank Team could use an audit access to the bank's loan management system (core banking system) and collateral management system to verify the integrity.

Collateral information for performing exposures that are reclassified as impaired or viewed as more likely than not to have a loss in the future should be passed for appraisal as soon as is possible. It is important to avoid delays in passing on the information as the result of the collateral valuation is required for the impairment review.

If the required information is not available to analyse a debtor, then the NCA bank team will need to decide whether or not to replace the debtor in the sample[30]. The following approach should be taken.

- If the exposure has been amortised or one of the exclusion conditions described in section 3.5 apply – the file has to be replaced[31,32.]
- Some information is missing, but a reliable assessment of the debtor can still be made based on other available information– No replacement applies[33].
- Some information is missing, other information is sought but not available – no replacement applies, but the shortfall of information should be bridged with prudent enough assumptions[34,35].
- The exposure lacks critical information or is entirely missing – In these circumstances, the whole exposure should be considered as a misstatement and a 100% provision applied. However, this exposure should be treated as an anomaly in the context of the misstatement

---

30 AU Section 530, .A19: *"In some circumstances, the auditor may not be able to apply the planned audit procedures to select sample items because, for example, the entity might not be able to locate supporting documentation. The auditor's treatment of unexamined items will depend on their effect on the auditor's evaluation of the sample. If the auditor's evaluation of the sample results would not be altered by considering those unexamined items to be misstated, it may not be necessary to examine the items, for example, if the aggregate amount of the unexamined items, if treated as misstatements or deviations, would not cause the auditor's assessment of the amount of the misstatement or deviation in the population to exceed tolerable misstatement or tolerable deviation, respectively. However, when this is not the case the auditor is required by paragraph .11 to perform alternative procedures that provide sufficient appropriate audit evidence to form a conclusion about the sample item and use the results of these procedures in assessing the sample results. If alternative procedures cannot be satisfactorily performed in these cases, the auditor is required to treat the items as misstatements or deviations, as appropriate, in evaluating the results of the sample. Section 240, Consideration of Fraud in Financial Statement Audit, also requires the auditor to consider whether the reasons for the auditor's inability to examine the items have implications with regards to assessing risks of material misstatement due to fraud, the assessed level of control risk that the auditor expects to be supported, or the degree of reliance on management representations."*

31 AU Section 530, Paragraph 10: *"If the audit procedure is not applicable to the selected item, the auditor shall perform the procedure on a replacement item."*

32 ISA 530, A14: *"An example of when it is necessary to perform the procedure on a replacement item is when a voided check is selected while testing for evidence of payment authorization. If the auditor is satisfied that the check has been properly voided such that it does not constitute a deviation, an appropriately chosen replacement is examined."*

33 ISA 530, A16: *"An example of a suitable alternative procedure might be the examination of subsequent cash receipts together with evidence of their source and the items they are intended to settle when no reply has been received in response to a positive confirmation request."*

34 AU Section 530, Paragraph 11: *"If the auditor is unable to apply the designed audit procedures, or suitable alternative procedures, to a selected item, the auditor should treat that item as a deviation from the prescribed control (in the case of tests of controls) or a misstatement (in the case of tests of details)."*

35 ISA 530, A15: *"An example of when the auditor is unable to apply the designed audit procedures to a selected item is when documentation relating to that item has been lost."*

projection of findings[36] (see Chapter 6) and so should not be included in projection of findings to unsampled parts of the portfolio. In observance of the principle of sufficiency, the file will be replaced with another of the same portfolio and stratum[37].

In general, circumstances suggesting that a replacement is necessary will be considered as exceptional and have to be flagged to the NCA before the replacement is made, with a clear explanation of the circumstances and proposed approach. The most likely nature or cause of the circumstance has to be described by the NCA bank team on a best effort basis, as it might indicate intentionality or the possibility of fraud[38]. The authorisation from the corresponding NCA is a pre-requisite for the replacement.

A debtor from a given portfolio and stratum can be replaced only with another debtor from the same portfolio and stratum.

For the avoidance of doubt, the following non-exhaustive list of examples are meant to illustrate, just in the context of file replacement, what is and what is not considered prudent enough, suitable alternative procedure and critical information.

- Prudent enough:
  - In the absence of information on the type of real estate collateral, assume worst case for the purposes of defining yield assumptions and for the purposes of collateral valuation (e.g. assume real estate is secondary industrial).
  - In the context of missing updated information about the compliance with covenants, prudent enough is assuming that the covenant has been breached.
- Suitable alternative procedure:
  - In the context of missing latest appraisal report for a collateral, a suitable alternative procedure would be getting the public property registry information and based on that carrying-out a desk based reappraisal.
  - In the context of missing information for the re-calculation of LTV, using a portfolio benchmark would never be considered a suitable alternative procedure.

---

36 ISA 530, A19: *"When a misstatement has been established as an anomaly, it may be excluded when projecting misstatements to the population. However, the effect of any such misstatement, if uncorrected, still needs to be considered in addition to the projection of the non-anomalous misstatements."*

37 ISA 530, A21: *"For tests of controls, an unexpectedly high sample deviation rate may lead to an increase in the assessed risk of material misstatement, unless further audit evidence substantiating the initial assessment is obtained. For tests of details, an unexpectedly high misstatement amount in a sample may cause the auditor to believe that a class of transactions or account balance is materially misstated, in the absence of further audit evidence that no material misstatement exists."*

38 ISA 530, A17: *"In analyzing the deviations and misstatements identified, the auditor may observe that many have a common feature, for example, type of transaction, location, product line or period of time. In such circumstances, the auditor may decide to identify all items in the population that possess the common feature, and extend audit procedures to those items. In addition, such deviations or misstatements may be intentional, and may indicate the possibility of fraud."*

- Critical information, for example:
  - Historical behavioural information of the client (repayment, days past due, etc.);
  - Prospective client risk initial assessment and client risk monitoring reports;
  - Information required to form a robust opinion about the applicability of impairment triggers.

4.5 CLASSIFICATION REVIEW

All exposures selected in the sample selection process undergo the classification review. The classification review described in the following sub-sections, focuses on the adequacy of impairment status and non-performing exposure, regulatory exposure class, AQR asset segment classifications and related party lending. The guidance is to be applied to each debtor selected. It is practicable to assess all exposures to a certain debtor at the same time.

The NCA Bank Team should begin reviewing loan files as soon as they are available. This would be expected to be from 4 April 2014 for the priority debtor exposures, as they should have been identified and made available before the risk based sample is selected. Similarly, other larger or distressed exposures that are sampled are likely to be easily accessible by the significant bank and therefore available relatively swiftly after the sample is selected. However, it may take longer to acquire the data for smaller, 'normal' exposures.

In the following sections further information is provided on how classifications should be verified. For residential real estate, that is already classified as impaired or NPE, the respective classification checks are not required.

4.5.1 IMPAIRMENT AND PROVISIONING CLASSIFICATION

In line with IAS 39, the significant bank must have identified exposures showing evidence of impairment.[39]

[39] Treatment of exposures not covered by IAS 39, i.e. loan commitments and financial guarantees (covered by IAS 37) is described later in this section

IAS 39, Para 58 (EU)	*An entity shall assess at the end of each reporting period whether there is any objective evidence that a financial asset […] is impaired.*
IAS 39, Para 59 (EU)	*A financial asset […] is impaired and impairment losses are incurred if, and only if, there is objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the asset (a 'loss event') and that loss event (or events) has an impact on the estimated future cash flows of the financial asset […] that can be reliably estimated. It may not be possible to identify a single, discrete event that caused the impairment. Rather the combined effect of several events may have caused the impairment. Losses expected as a result of future events, no matter how likely, are not recognised. […]*

Initially, the NCA bank team will compare the impairment triggers of the significant bank as of 31 December with the minimum triggers provided in Table 38 the loss events stipulated IAS 39[40]. Where the significant bank has defined additional or more conservative triggers, these should also be taken into consideration in addition to the minimum triggers. This implies that the evidence of impairment definition is at least as conservative as the significant bank's current classification. The minimum triggers and associated guidance around identifying impacted future cash flows represents a ECB threshold established for prudential purposes for the AQR. This does not represent a minimum standard to be applied in accounting. The ECB threshold can be considered to expire following the CA.

The NCA bank team should assess each exposure in the sample for objective evidence of impairment at 31 December 2013. This requires a two-step approach: First, assessment for each exposure whether a loss event has happened based on the triggers provided (see previous paragraph). Not all of the triggers apply to each debtor (e.g. CDS is not relevant for retail mortgages or large SME). Second, for each exposure with a loss event, the assessment whether the loss event has an *"impact on the estimated future cash flows"* of the exposure. If this is the case, the exposure will be considered as having evidence of impairment.

Impacts on future cash flows include:

- Deferral or (temporary) discontinuation of cash flows;
  - Modification of repayment terms under forbearance measures;
  - Debtor has filed or is likely to file bankruptcy application;
  - Any legal entity within the group of connected clients of the debtor (incl. subsidiaries of the debtor) is likely to or has filed bankruptcy application;

[40] IAS 39, Para 59 (EU Implementation)

- Initiation of legal proceedings against the debtor from the significant bank or another creditor;

- Diversion of cash flows;
  - A material amount already past due (with the significant bank or any creditor);
  - A material amount expected past due (with the significant bank any creditor);
  - Past due to public creditors or employees;
  - Major suppliers requiring delivery versus payment who had previously granted supplier credit;
  - Diversion of cash flows from earning assets to support non-earning assets;
  - Use of loaned funds for a different purpose than provided in the loan contract;
- A material decrease in estimated future cash flows of the debtor;
  - A material decrease in turnover or the loss of a major customer;
  - A material decrease in rents received on a buy-to-let property;
  - Breach of financial covenants;
  - Decrease in the value of the collateral or the disappearance of an active market in cases when repayment of the loan is dependent on the collateral liquidation;
  - Foreclosure of significant assets and equipment used in the production process of the debtor by another creditor;
  - Any other observable information indicating that there is a material decrease in the estimated future cash flows;
- Inability to repay bullet/principal due to insufficient cash flow or due to unavailability of refinancing;
  - Debt service coverage ratio of less than 1.1;
  - Inability to meet future interest payments;
  - The disappearance of a market for refinancing options for the debtor.

Note: As per IAS 39 current or past cash flows do not necessarily need to be impacted for an exposure to be considered impaired

NCA bank teams will classify exposures as having evidence of impairment irrespective of whether the impacted future cash flows indicate that an impairment loss should be registered (i.e. impaired loans where impairment loss is assessed as 0 due to collateral should be viewed as being impaired because cash flows will be impacted by the foreclosure of collateral).

If at least one material exposure to a certain sovereign/institutional/corporate debtor is classified as impaired, all on- and off-balance sheet exposures to this debtor will be considered as having evidence of impairment. The materiality of an exposure will be assessed against the threshold defined by the competent authorities according to Article 178(2)(d) of CRR. When a debtor belongs to a group (of connected clients), impairment of a debtor in the group should be considered as a loss event though does not necessarily imply all debtors in the group of connected clients should be considered impaired, if other debtors in the group are not anticipated to have any disruption to contractual cash flows.

Where the current impairment classification is not appropriate, the NCA bank team will determine the new classification. NCA bank teams will provide a short explanation for the change in classification.

NCA bank teams will separately flag those exposures, where a provision cannot be recorded yet due to accounting rules but credit losses are perceived as highly likely. An expected future loss will be recorded – these exposures will undergo the same procedures as impaired assets (as described in the next paragraph). This is the case when a loss event has not occurred but an impact on future cashflows is considered more likely than not. An example of how this could occur is described below:

- A CRE debtor is financing a tenanted property with an LTV of 90% (based on the current yield of the property). The property is rented at above current market rates for the next 10 years
- The financing is interest only. The refinancing date is in 18 months time
- The tenant is in significant financial difficulties but is still paying rent
- The market rent would imply an LTV of 110%
- The debtor is not currently considered to be in financial difficulties, but it is highly likely that the rent on the property will need to renegotiated as part of the restructuring of the tenant and as such forbearance will be required at the refinancing date

For the avoidance of doubt, the ECB has set thresholds for impairment triggers that will define specific loss events.

If a loss event occurs before or on 31 December but knowledge is obtained thereafter, it will be taken into account for the impairment status. If the loss event occurs after 31 December, the exposure will be treated as having a high likelihood of future losses.

For exposures, which had previously been classified as impaired but where the financial situation of the debtor is subsequently improved (before liquidation of collateral), a full or partial reversal of the provision amount will be recognised in line with IAS 39(65). Reversal

will be tested as prescribed in Section 4.6. Only if a full reversal is justified (before liquidation of collateral) a change to "not impaired" will be justified.

Example

The exposure under review is 60 days past due and has not been classified as impaired.

Following examples (non-exhaustive) could lead the NCA bank team to the conclusion that minimum impairment triggers were breached:

- The debtor has been downgraded to CCC
- The debtor has withdrawn the external credit rating and the last rating had been B- with negative outlook
- CDS peaked at 1,050 bps during the last 12 months
- The debtor payment schedule has been amended to interest only due to financial difficulties of the debtor without any adjustment to interest rates;
- Facility rescheduled on clearly uncommercial terms e.g. 10 year I/O at EURIBOR + 0 bps
- The US subsidiary of the debtor has entered into Chapter 11 procedures

Table 38 Minimum impairment triggers for IAS 39 loss events		
IAS 39 loss event	**Minimum triggers**	**Examples for accepted more conservative triggers if defined in internal policies of the significant bank of other possible triggers (not required to be applied as part of AQR unless in existing bank policy)**
(a) significant financial difficulty of the issuer or obligor	• External or internal rating indicating default or near-default (Credit Quality Step 6 as defined in CRR); • The debtor is classified as defaulted according to Article 178 of CRR; • 5Y CDS > 1,000 bps within last 12 months; • Equity reduced by 50% within a reporting period due to losses • Debtor has requested emergency funding with the significant bank • A material amount past due to public creditors or employees • A material decrease in the collateral value where the sale of the financed asset is required to repay the loan (e.g. CRE) • A material decrease in turnover or the loss of a major customer • A material decrease in estimated future cash flows; • Current debt service coverage ratio is below 1.1.	• Speculative and high-credit risk (Credit Quality Step 5 or 6 as defined in CRR); • External credit rating withdrawn to avoid downgrade to Credit Quality Step 5 or 6; • A significant decline in the Institution's credit rating of the debtor; • Negative EBITDA for 2 consecutive years; • Decline of EBITDA by more than 50% within a year; • Negative equity; • Diversion of cash flows from earning assets to support non-earning assets.
(b) breach of contract, such as a default or delinquency in interest or principal payments	• > 90 days past due on any facility at the debtor level (subject to materiality criteria); • Covenant breach not waived by the bank; • ISDA Credit Event declared.	• > 30 days past due

Table 38 Minimum impairment triggers for IAS 39 loss events		
(c) the lender, for economic or legal reasons relating to the borrower's financial difficulty, granting to the borrower a concession that the lender would not otherwise consider	• All exposures that would be defined as forborne NPE as defined in EBA/ITS/2013/03[41]	• All exposures under forbearance measures as defined in EBA/ITS/2013/03
(d) it [is] becoming probable that the borrower will enter bankruptcy or other financial reorganisation	• Debtor has filed bankruptcy application; • Any legal entity within the group of connected clients of the debtor (incl. subsidiaries of the debtor) has filed bankruptcy application.	• Internal client coverage expects high likelihood of bankruptcy procedures; • Press reports suggesting immediate probability of bankruptcy.
(e) the disappearance of an active market for that financial asset because of financial difficulties	• Bond trade (temporarily) suspended at primary exchange because of rumours or facts about financial difficulties • The disappearance of an active market for the assets financed • The disappearance of a market for refinancing options for the debtor	• CDS quotes discontinued because of rumours or facts about financial difficulties

Impairment adjustments that are due to breaches of accounting rules as well as ECB thresholds should be flagged separately from adjustments due to breach of ECB thresholds only. A field

[41] Relevant excerpts (see full text in EBA document): [Forbearance] concessions [refer] to (a) a modification of the previous terms and conditions of a contract the debtor is considered unable to comply with due to its financial difficulties ("troubled debt") to allow for sufficient debt service ability, that would not have been granted had the debtor not been in financial difficulties; (b) a total or partial refinancing of a troubled debt contract, that would not have been granted had the debtor not been in financial difficulties. Evidence of a concession includes: (a) a difference in favour of the debtor between the modified and the previous terms of the contract; (b) cases where a modified contract includes more favourable terms than other debtors with a similar risk profile could have obtained from the same institution. Non-performing exposures are those that satisfy either or both of the following criteria: (a) material exposures which are more than 90 days past-due; (b) the debtor is assessed as unlikely to pay its credit obligations in full without realisation of collateral, regardless of the existence of any past-due amount or of the number of days past due. When forbearance measures are extended to non-performing exposures, the exposures may be considered to have ceased being non-performing only when all the following conditions are met: (a) the extension of forbearance does not lead to the recognition of impairment or default; (b) one year has passed since the forbearance measures were extended; (c) there is not, following the forbearance measures, any past-due amount or concerns regarding the full repayment of the exposure according to the post-forbearance conditions. The absence of concerns has to be determined after an analysis of the debtor's financial situation. Concerns may be considered as no longer existing when the debtor has paid, via its regular payments in accordance with the post-forbearance conditions, a total equal to the amount that was previously past-due (if there were past-due amounts) or that has been written-off (if there were no past-due amounts) under the forbearance measures or the debtor has otherwise demonstrated its ability to comply with the post-forbearance conditions.

will be included in the T4B template for this purpose. It will be for the NCA to decide which adjustments the bank should be required to make to accounts following the CA.

Treatment of undrawn financial guarantees and loan commitments

Similarly to loans, off-balance sheet commitments such as financial guarantees and loan commitments give rise to potential credit losses. Financial guarantees or loans commitments in scope of IAS 37[42] will be analysed for the need of a provision to be recognised in line with IAS 37.

IAS 39, Para 2h (EU)	*[…] An issuer of loan commitments shall apply IAS 37 Provisions, contingent liabilities and contingent assets to loan commitments that are not within the scope of [IAS 39 as defined in IAS 39(4)…].*

As a first step, the NCA bank team will assess the requirement to recognise a provision for any of these exposures in accordance with IAS 37(14):

	A provision shall be recognised when:
IAS 37, Para 14 (EU)	*(a) an entity has a present obligation (legal or constructive) as a result of a past event;*
	(b) it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation; and
	(c) a reliable estimate can be made of the amount of the obligation.

Commitments that can be cancelled unconditionally at any time without notice are not in scope. The NCA bank team will generally regard other commitments as legal obligations in accordance with IAS 37.

Sufficient probability of an outflow occurring will be assumed for all medium and high-risk items as defined in Annex I of CRR[43]. The NCA bank team will assess medium/low risk items[44]

---

42 Excluded are loan commitments and financial guarantee contracts that are accounted for at fair value or that can be settled net in cash or securities (derivatives) - where IAS 39 applies.

43 These are: guarantees having the character of credit substitutes, (e.g. guarantees for the good payment of credit facilities); credit derivatives; acceptances; endorsements on bills not bearing the name of another institution; transactions with recourse (e.g. factoring, invoice discount facilities); irrevocable standby letters of credit having the character of credit substitutes; assets purchased under outright forward purchase agreements; forward deposits; the unpaid portion of partly-paid shares and securities; asset sale and repurchase agreements as referred to in Article 12(3) and (5) of Directive 86/635/EEC; other items also carrying full risk; trade finance off-balance sheet items, namely documentary credits issued or confirmed; shipping guarantees, customs and tax bonds; undrawn credit facilities (agreements to lend, purchase securities, provide guarantees or acceptance facilities) with an original maturity of more than one year; note issuance facilities (NIFs) and revolving underwriting facilities (RUFs); other items also carrying medium risk and as communicated to EBA.

44 These are: documentary credits in which underlying shipment acts as collateral and other self-liquidating transactions; warranties (including tender and performance bonds and associated advance payment and retention guarantees) and guarantees not having the character of credit substitutes; irrevocable standby letters of credit not having the character of credit substitutes; undrawn credit facilities which comprise agreements to lend, purchase securities, provide guarantees or acceptance facilities with an original maturity of up to and including one year which may not be cancelled unconditionally at any time without notice or that do not

for sufficient probability and include these on a case by case basis. The NCA bank team will regard all off-balance sheet exposures that would be classified as impaired as requiring economic benefits to settle the obligation.

Example

Case 1:

Significant Bank A has granted a committed credit facility to debtor X. Debtor X has drawn significant parts of the facility and the drawn amount is impaired. As Significant Bank A cannot cancel the facility and is likely to incur losses if any amount is drawn, a provision is required.

Case 2:

Significant Bank A has granted a committed credit facility to debtor X. There is no on-balance exposure to debtor X. Debtor X has been downgraded to Credit Quality Step 6. As Significant Bank A cannot cancel the facility and is likely to incur losses if any amount is drawn, a provision is required.

Case 3:

Significant Bank A has granted a credit facility to debtor X that can be cancelled unconditionally without prior notice. No provision is required.

Impairment classifications are covered in fields P_PROVD, P_SPECD and P_IBNRD of the debtor view of the loan tape for non-retail and P_PROVF, P_SPECF and P_IBNRF for RRE exposures.

4.5.2 NPE CLASSIFICATION

The NPE classification of each exposure should be verified. Two NPE definitions should be checked: The bank's internal NPE definition and the EBA Simplified Approach NPE definition used for the purposes of the AQR. The definition should be based on revised impairment classifications (as per the above).

effectively provide for automatic cancellation due to deterioration in a borrower's creditworthiness; other items also carrying medium/low risk and as communicated to EBA.

Example

Significant Bank A classifies exposures as non-performing only if days past due > 180 days.

An exposure is 120 days past due with a material amount, that has not been impaired by the bank or identified as defaulted. The bank classifies the exposure as 'performing' under the internal definition of NPE **and** the EBA simplified approach

The impairment classification is checked as part of the AQR and the exposure is found to be impaired. Also, the exposure is > 90 days past due.

The classification should be corrected as follows

- Internal NPE definition = performing
- EBA simplified approach NPE definition = non-performing

NPE classifications are covered in S_NPEINT, S_NPEAQR and S_NPE12M of the debtor view of the loan tape for non-retail exposures and in the facility view for RRE exposures.

4.5.3 REGULATORY EXPOSURE CLASSIFICATION

For regulatory capital requirements purposes exposures are assigned to several categories, such as institutions, corporate, retail, etc. NCA bank teams will assess the adequacy of the regulatory exposure class as follows:

- Where a significant bank uses the standardised approach for the calculation of risk-weighted assets, the exposure classification under Article 112 of CRR[45] will be used;
- Where a significant bank uses the IRB Approach for the calculation of risk-weighted assets, the exposure classification under Article 147 of CRR[46] will be used.

The classification will be reviewed in line with the rules provided in CRR. NCA bank teams will pay particular attention to

- Outdated data used for classification (e.g. EUR 1 MM exposure limit information for retail according to Article 123c of CRR);
- Areas where there might be room for interpretation of rules (e.g. retail or corporate); and
- Patterns for misclassification[47].

[45] Central governments or central banks; regional governments or local authorities; public sector entities; multilateral development banks; international organisations; institutions; corporates; retail; secured by mortgages on immovable property; exposures in default; exposures associated with particularly high risk; exposures in the form of covered bonds; securitisation positions; exposures to institutions and corporates with a short-term credit assessment; exposures in the form of units or shares in collective investment undertakings ('CIUs'); equity exposures; other items.

[46] Central governments and central banks; institutions; corporates; retail exposures; equity exposures; securitisation positions; other non-credit-obligation assets.

Exposures classified as impaired will be classified as defaulted i.e. PD=1.

Where there are differences, NCA bank teams will determine the correct exposure classification. Where there are patterns of classification differences, NCA bank teams will obtain additional information about the importance of the difference. If the pattern is expected to affect > 1% of total Banking Book exposure, NCA bank teams will reflect this pattern in the projection of findings of credit file review process (see Chapter 6).

If there are significant patterns of misclassification (> 1%) or if the NCA bank team has significant doubt over the quality of the regulatory exposure classification due to a high number of individual misclassifications (e.g. 5% of sampled exposure misclassified), the significant bank will be expected to develop an action plan to remediate the issues.

The significant bank will be expected to correct misclassifications, which may lead to a change in risk-weighted assets (including changing risk weights for defaulted exposures) following the comprehensive assessment.

Example

Significant Bank A has assigned all exposures to the company "Smith Manufacturing" to Corporates exposures, including the equity instruments Bank A holds. The equity instruments should have been categorised as Equity Exposures. The NCA bank team finds several similar cases and requests explanation.

The finding is that Significant Bank A has significant data quality issues due to manual data entry. Significant Bank A devises a remediation plan to cover this requirement by a more automated process.

Regulatory exposure classifications are covered in the field S_CRR in the facility view of the loan tape.

4.5.4 AQR ASSET SEGMENT CLASSIFICATION

All exposures are mapped to the AQR asset segments in the loan tape. NCA bank teams will verify the adequacy of the AQR asset exposure segmentation in line with the definitions provided.

While automated checks based on the information in the loan tape are part of DIV, in the classification review NCA bank teams should use the additional information from the Credit

[47] An individual misclassification happens due to the data available for the individual case. A pattern of misclassification exists, where a common logic or process is not adequate.

File on the sampled exposures to verify the AQR segment. This includes at least the loan application, bank credit papers, facility offer letter and collateral information.

Example

Significant Bank A has assigned a sampled exposure to "Aviation". The NCA bank team verifies that the exposure is indeed a loan and not a securitisation. The debtor is a large airline, so the classification as Corporate is correct.

The NCA bank team then screens the collateralisation agreement and finds that all exposures to this debtor are secured with airplanes but this exposure is not. The NCA bank team assigns the correct asset segment "large corporates (non-real estate)".

As the NCA bank team finds several additional similar cases, explanation from the significant bank is requested. The finding is that the significant bank had mapped all loans to "Aviation" based on the debtor but not on the collateral.

Where there are differences, NCA bank teams will determine the correct loan segmentation classification. NCA bank teams will pay particular attention to patterns for classification differences. Where there are such patterns, NCA bank teams will obtain additional information about the importance of the difference. If the pattern is expected to affect > 1% of total Banking Book exposure, NCA bank teams will make corrections in the projection of findings of credit file review process (see Chapter 6).

AQR asset segment classifications are covered in fields S_AQRASF in the facility view of the loan tape (for RRE) and S_AQRSD in the debtor view of the loan tape (for non-retail).

4.5.5 RELATED PARTY TRANSACTIONS

All exposures to debtors meeting the definition of a related party should be indicated as such in the loan tape. As the final step of the classification review, the NCA bank team should therefore assess whether the Debtor should be considered a related party in accordance with IAS 24. This is not required for residential real estate.

A related party is a person or entity that is related to the entity that is preparing its financial statements […]

(a) A person or a close member of that person's family is related to a reporting entity if that person:

(i) has control or joint control over the reporting entity;

(ii) has significant influence over the reporting entity; or

(iii) is a member of the key management personnel of the reporting entity or of a parent of the reporting entity.

(b) An entity is related to a reporting entity if any of the following conditions applies:

(i) The entity and the reporting entity are members of the same group (which means that each parent, subsidiary and fellow subsidiary is related to the others).

IAS 24, Para 9 (EU)

(ii) One entity is an associate or joint venture of the other entity (or an associate or joint venture of a member of a group of which the other entity is a member).

(iii) Both entities are joint ventures of the same third party.

(iv) One entity is a joint venture of a third entity and the other entity is an associate of the third entity.

(v) The entity is a post-employment benefit plan for the benefit of employees of either the reporting entity or an entity related to the reporting entity. If the reporting entity is itself such a plan, the sponsoring employers are also related to the reporting entity.

(vi) The entity is controlled or jointly controlled by a person identified in (a).

(vii) A person identified in (a)(i) has significant influence over the entity or is a member of the key management personnel of the entity (or of a parent of the entity).

[…]

Related party classification is covered in field R_RELATD in the debtor view of the loan tape (non-retail only).

The financing of a third party to purchase assets from a related party should also be flagged separately and all collateral worth >€100K should be revalued by a third party (all exclusions/limitations described in the collateral valuation section of this document should not apply).

4.6 INDIVIDUAL IMPAIRMENT AND PROVISIONING REVIEW

Exposures classified as having evidence of impairment/requirement for provisioning/more likely than not to have future losses that qualify for individual assessment undergo the individual impairment review described in this chapter. All sovereign, institutional and corporate exposures according to AQR asset segmentation will qualify for individual

impairment assessment. Guidance for the calculation of provisions for undrawn financial guarantees and loan commitments is also provided.

While information about the group of connected clients is required for the impairment and provision review, only the impairment/provision for the sampled debtor in question will be calculated.

While the described methodology refers to IFRS terminology, a consistent approach should be followed, to the extent possible, for banks that following national GAAP (and for debtors using national GAAP). Where instead of an additional impairment, a change in reserves or provisions is foreseen by the respective accounting standard, reserves or provisions will be changed accordingly. For readability reasons, the remainder of this Section refers to impairments only.

As described above, we define ECB thresholds to ensure consistent application of accounting principles for prudential purposes. This should not be viewed as an attempt to prescribe accounting rules.

To determine the required impairment, the NCA bank team will estimate the recoverable amount (the present value of estimated future cash flows) from the exposure.

IAS 39, Para 63 (EU)	*If there is objective evidence that an impairment loss on loans and receivables or held-to-maturity investments carried at amortised cost has been incurred, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows […]*

The approach requires the NCA bank team to conduct three tasks to determine the required impairment

1. Decide on gone or going concern approach to DCF analysis;
2. Perform going/gone concern DCF analysis;
3. Derive the impairment estimate.

As a first step, the NCA bank team will determine whether a going concern or gone concern outcome is the most likely outcome for the impaired debtor:

- Under going concern operating cash flows continue and can be used to repay the financial debt to all creditors. In addition, collateral may be exercised to the extent it does not influence operating cash flows (e.g. premises pledged as collateral cannot be exercised without impacting cash flows, stock or commodities pledged under asset based lending

product cannot be sold without significantly impacting operations of business); This is more likely if, e.g.

- future operating cash flows of the debtor are material and can be reliably estimated;
- there is only limited collateralisation of the exposure;

- Under gone concern the collateral is exercised and operating cash flows of debtor cease. This is more likely if, e.g.
  - future operating cash flows of the debtor are estimated to be low or negative
  - the exposure to the debtor is significantly collateralised and this collateral is central to cash flow generation
  - going concern would negatively materially impact the recoverable amount to the Bank (e.g. further drain of financial resources, reduction in value of collateral)

The significant bank's choice regarding going or gone concern can be used as an input but needs to be challenged by the NCA bank team.

If insufficient information is available to perform a going concern analysis, then a gone concern analysis should be performed. If this is viewed as too conservative for a particular portfolio then the challenger model analysis for collective provisions may be applied as described in section 7. However, if a collective provisioning based approach is used, it must be applied for the whole portfolio, not just the parts for which financial information is not available.

Where the carrying amount of an exposure exceeds the recoverable amount, an additional impairment is required. The following analysis will be carried out at exposure level.

The additional impairment is defined as

$$\textit{Additional Impairment} = \textit{Carrying Amount} - \textit{Recoverable Amount}$$

The *Carrying Amount* is the net book value after any impairments/specific provisions or write-offs.

If *Recoverable Amount* > *Carrying Amount* for a previously impaired exposure, the NCA bank team will consider a (partial) reversal of impairments. In the case of going concern, if a full reversal is justified due to an improvement in the debtor's financial situation (i.e. before liquidation of collateral), the impairment status will be changed to "not impaired". Otherwise, the asset will remain impaired with impairment amount = 0.

IAS 39, Para 65 (EU)

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised (such as an improvement in the debtor's credit rating), the previously recognised impairment loss shall be reversed either directly or by adjusting an allowance account. The reversal shall not result in a carrying amount of the financial asset that exceeds what the amortised cost would have been had the impairment not been recognised at the date the impairment is reversed. The amount of the reversal shall be recognised in profit or loss.

This requires that there is other objective evidence that the impairment is lower than originally anticipated. This may be assumed the case if (note the following list is non-exhaustive)

- the debtor has amortised a higher fraction of the outstanding debt than anticipated at the time of the previous impairment; or
- the debtor has provided additional collateral since the previous impairment; or
- cash flows have improved; or
- at least one of the loss events that lead to the impairment tests has been reversed; or
- any other event that has led to an improvement in Recoverable Amount from this debtor

Example

Case 1:

Exposure of € 100, no previous impairments/write-offs. Recoverable Amount = €80

Additional Impairment = €100 - €80 = €20

Case 2:

Exposure of € 100, no previous impairments/write-offs. Recoverable Amount = €120

Additional Impairment = €100 - €120 = - €20; as there is no reversal of impairments, additional impairment is set to zero.

Case 3:

Exposure of €100, previous impairment = €30. Recoverable Amount = €80

Additional Impairment = €70 - €80 = - €10 (Reversal)

The cash flows will be discounted at the original effective interest rate as per IAS 39.

IAS 39, Para 63 (EU)	*[…] present value of estimated future cash flows […] discounted at the financial asset's original effective interest rate (i.e. the effective interest rate computed at initial recognition.)*
IAS 39, Para AG84 (EU)	*Impairment of a financial asset carried at amortised cost is measured using the financial instrument's original effective interest rate because discounting at the current market rate of interest would, in effect, impose fair value measurement on financial assets that are otherwise measured at amortised cost. If the terms of a loan, receivable or held-to-maturity investment are renegotiated or otherwise modified because of financial difficulties of the borrower or issuer, impairment is measured using the original effective interest rate before the modification of terms.[…] If a loan, receivable or held-to-maturity investment has a variable interest rate, the discount rate for measuring any impairment loss […] is the current effective interest rate(s) determined under the contract.*

The total impairment/provisioning adjustment at a debtor level (both positive and negative) should be used for the purposes of reporting findings for each stratum of the sample. Results for multiple debtors in a group should be reported separately in the appropriate stratum. Results will be used for the Capital calculation as part of the AQR-adjusted CET1% calculation (both sampled and extrapolated). Please refer to Sections 6.6 and 9.5.1 for details. For cases where no provision can be recognised but future losses are highly likely, expected future losses will be extrapolated to the remainder of the sample in the same manner by separately repeating the extrapolation process described in the later sections.

Treatment of undrawn financial guarantees and loan commitments

For exposures not covered by IAS 39 and classified as requiring provisioning in line with IAS 37 during the Classification Review the NCA bank team will estimate the provision amount as the expected loss incurred from the commitment.

IAS 37, Para 14 (EU)	*The amount recognised as a provision shall be the best estimate of the expenditure required to settle the present obligation at the end of the reporting period*

To measure the most likely Drawn Exposure, the NCA bank team will either use reliable cash flow forecasts or loan contracts (e.g. under the two-step DCF approach) or apply the credit conversion factors stipulated in Article 166(10) of CRR based on the classifications in Annex I of CRR on the nominal of the commitment.

The *Provision Amount* (instead of the impairment) is then the difference between the present value of the Drawn Exposure and the Recoverable Amount derived in line with the on-balance sheet methodology.

Identification of anomalies

There might be debtors, where a projection of findings is not appropriate given the very special nature compared to the other exposures in the same stratum. These debtors will be flagged as anomalies and will be excluded from the projection of findings. This will be challenged by the NCA QA&TAT as well as CPMO. While there is no specific cap on the number of anomalies but these are expected to be rare. Only confirmed anomalies can be excluded from projection of findings.

4.6.1 GONE CONCERN APPROACH

The gone concern approach assumes that operational cash flows of the debtor cease and the collateral is exercised. The analysis of collateral proceeds will be done on an exposure level.

The NCA bank team will adjust the future proceeds from collateral execution for liquidation costs and the lien structure. The original effective interest rate of the loan will be used for discounting the cash flows.

IAS 39, Para AG84 (EU)	*[…]The calculation of the present value of the estimated future cash flows of a collateralised financial asset reflects the cash flows that may result from foreclosure less costs for obtaining and selling the collateral, whether or not foreclosure is probable.*

The Recoverable Amount of the collateral proceeds at t=0 is therefore defined as follows:

$$Recoverable\ Amount = Collateral\ Share\ \% * \sum_{t=0}^{T} \left(\frac{Liquidiation\ Proceeds_t - Liquidiation\ Costs_t}{(1 + EIR)^t} \right)$$

As a first step, the NCA bank team will estimate expected time to liquidation (T), $\{Liquidation\ Proceeds_t\}_{t=0}^{T}$and $\{Liquidation\ Costs_t\}_{t=0}^{T}$. This will be based on the NCA bank team's experience, input from appraisers, the significant bank's collateral execution

policies and 2011-2013 significant bank data. All methodology and parameter estimation will be applied consistently across debtors but differentiated by collateral type and region.

$\{Liquidation\ Proceeds_t\}_{t=0}^{T}$ are the cash inflows during the liquidation process. The NCA bank team will estimate these inflows for each year of the liquidation process taking into account both income generation of the asset (e.g. rent) and proceeds from sale (including consideration of whether collateral perfection will allow reasonable execution of collateral in a realistic timeframe). Proceeds from sale should be based on market value. Market values should be determined as described in the collateral valuation section, though also include expected falls (but not rises) in market value in the time between observation and sale. To take into account expected falls in market values, forward-looking indices will be provided by CPMO.

Where there has not been a new appraisal (e.g. for if the collateral was revalued in the last 12 months), the last appraisal value will be indexed forward from the date of the last valuation to the expected point of sale based on indices agreed with the ECB. The indices will be agreed during March 2014.

The NCA bank team should also take into account the recoverability of insurance and guarantees, considering fully what outcome is most likely on each policy/protection – pay or not pay. As a rule of thumb, unfunded credit protection eligible under CRR, where the provider of the protection is rated at Credit Quality Step 3 or above should be acceptable.

$\{Liquidation\ Costs_t\}_{t=0}^{T}$ are the cash outflows incurred during collateral execution and the sales process. The NCA bank team will estimate these outflows for each year of the liquidation process. These costs should include law enforcement, NCA bank team and other sales costs as well as haircuts to market value. The market price haircut will reflect liquidity of the market and liquidation strategy. It will not reflect fire sale conditions unless the anticipated liquidation strategy involves a fire sale. A "hold" strategy on real estate is not acceptable. If the plan is to sell with vendor finance, then the present value of the discount given to the client on financing (vs. market rates) should be included in the liquidation costs. The market price haircut can be zero for liquid and non-distressed collateral types but is expected to be at least 10% in the following cases[48]:

- The collateral will be sold by auction;
- The collateral was foreclosed 2 years ago and has not been sold; and

[48] If no market price haircut for liquid and non-distressed collateral is made, the NCA bank team needs to substantiate that the collateral is really liquid and non-distressed and that no costs for the sale are to be expected. Ideally, the bank already has a binding offer from a third party to acquire the collateral.

- The collateral is sold involving vendor finance reflecting the NPV loss from the provision of cheaper than market financing.

Subsequently, the NCA bank team will analyse the lien structure to determine *Collateral Share %*. *Collateral share %* should reflect the claims of other parties on the same collateral e.g.:

- If another creditor has a preferred claim on the collateral (i.e. the significant bank's claim is only second lien), greater than the recoverable value *Collateral Share %* is set to 0 % ;
- If the significant bank's claim is first lien but pari passu with other creditor's claims, *Collateral Share %* equals the contractually agreed share of the claim. If there is no such agreement and national insolvency law does not provide explicit guidance, the significant bank's share of exposure towards this collateral will be used;
- The NCA bank team will also review legal issues associated with collateral where these are material to the individual impairment and provisioning review, such as the strength of collateral claims.

The NCA bank team will determine the present value of the cash flows by discounting the proceeds with the original effective interest rate of the exposure (*EIR*). If there are several exposures against the same collateral, the average effective interest rate of these exposures weighted with *Collateral Share %* will be used. Please refer to Section 4.6 for details.

The NCA bank team will add expected proceeds from the liquidation of the debtor's non-pledged assets. This will be done in line with the guidance in Section 4.6.4.2. The result, however, is expected to be de minimus.

Example

CRE exposure of €100. The Bank expects the collateral to be sold under auction.

The NCA bank team estimates time to liquidation (*T*) to be 2 years for given liquidation strategy. *Liquidation Cost* are expected to be 5%of appraisal value in t=1 and 10% in t=2.

The bank holds a 1st lien claim but pari passu with another party (estimated claims 150 €). A further party has a 2nd lien claim; this is not taken into account

Collateral Share % is therefore € 100/(€ 100 + € 150) = 40%

The appraisers have valued the collateral at € 240. The effective interest rate of the exposure (EIR) is 5%

$$Collateral\ Proceeds_0 = 40\ \% * \left(\frac{€\ 240}{(1+5\%)^2} - \frac{€\ 240 * 5\%}{(1+5\%)^1} - \frac{€\ 240 * 10\%}{(1+5\%)^2}\right) = €73.80$$

Under the gone concern approach, the required impairment would be € 100 - € 73.80 = € 26.20

4.6.2 GOING CONCERN APPROACH

Under the going concern approach, cash flows continue and can be used to repay the financial debt to all creditors.

In addition, collateral may be exercised to the extent it does not influence operating cash flows (e.g. premises pledged as collateral cannot be exercised without impacting cash flows; stock or commodities pledged under asset based lending products cannot be sold without significantly impacting operations of business etc.). Where this is the case, the proceeds from the collateral will be derived in line with Section 4.6.1 and added to the present value of the operational cash flows.

The first step is for the NCA bank team to decide on the perimeter of the cash flow analysis. Then, the NCA bank team will estimate the present value of the operational cash flows.

IAS 39, Para G63 (EU)	*[…] the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate (i.e. the effective interest rate computed at initial recognition)[…]*

The NCA bank team will choose from two methodology options to derive the present value of operational cash flows[49].

Steady-state cash flow approach (standard approach)

- Estimate sustainable (steady-state) one-period operating cash flows of the debtor or group.
- Convert to present value by multiplying operational cash flows by a multiple to arrive at the sustainable level of debt for the bank.
- Add any discounted recoveries from sales of collateral that is independent of operating cash flows.
- Allocate present value to the significant bank[50].

Two-step discounted cash flow approach (where operating cash flows can be reliably projected):

- Forecast operating cash flows of the debtor or group over an appropriate time horizon (term of the exposure with the shortest term or 10 years whichever is the shorter);
- Add any recoveries from sales of collateral that is independent of operating cash flows to the cash flow projection;
- Derive terminal value of the debtor's cash flows in the same manner as the steady-state cash flow approach;
- Allocate cash flows to the significant bank and discount to present value[51].

The one step approach would typically be used for sovereign, institutional and corporate exposures. The two step approach is more suited to large ticket asset finance such as project finance and shipping.

Instead of performing a cash flow analysis, if an observable market price exists, this can be used as a practical expedient. If the NCA bank team chooses not to use the market price although it exists, the NCA bank team will nevertheless compare the results from the going concern approach to the market price based approach. If the Recoverable Amount from the going concern approach is more than 10% higher from the market price based expedient, this will be flagged by the NCA bank team and will be fully challenged by NCA QA teams and CPMO.

---

49 Note that "future credit losses that have not been incurred" should be included for the purposes of estimating "expected future losses" as referred to above.

50 The NCA bank Team shall take into account other creditors' claims and their ranking compared to the significant bank's. The ranking shall be done based on effective seniority, considering of implications of legal entity structure.

51 The NCA bank team shall take into account other creditors' claims and their ranking compared to the significant bank's. The ranking shall be done based on effective seniority, considering of implications of legal entity structure.

4.6.3 TREATMENT OF GROUPS OF CONNECTED CLIENTS

Going concern cash flow analysis should include cash flows from entities that are significantly economically interconnected. Significant economic interconnectedness is defined according to *CEBS Guidelines on the implementation of the revised large exposures regime*[52]. Entities that are identified by the bank as being part of the group but which are not considered by the NCA bank team to be interconnected should not be included in the cash flow analysis.

4.6.4 STEADY-STATE CASH FLOW APPROACH

The present value of cash flows to the significant bank for exposure i (*Cash Flow Value*$_{0,i}$) will be derived as follows:

- First, estimate the present value of cash flows of the debtor by forecasting a one-period sustainable (steady-state) cash flow (CF_S) and applying a multiple (M).
- Then, the NCA bank team will allocate the present value of cash flows of the debtor to the significant bank based on the effective seniority of each exposure.

4.6.4.1 Estimation of the present value of cash flows of the debtor

The present value of cash flow to the debtor is defined as

PV Operating Cash Flows (Debtor) = CF_S * M.

One-Period Sustainable Cash Flows (CF_S) are defined as follows:

$$CF_S = EBITDA + Cash\ Flow\ adjustment + Sustainability\ adjustment$$

The NCA bank team will follow the following general principles when forecasting CF_S:

- NCA bank teams will forecast CF_S on a going concern basis;
- NCA bank teams will estimate CF_S based on the financial statements of the debtor;
- Latest information is regarded as the best basis for forecasting EBITDA. Accounts from 2012 are acceptable. If no current information is available and cannot be retrieved by the significant bank within a timely manner, the CF_S is expected to be zero.
- The information of last management accounts and audited accounts should be used (where management accounts are available). Generally, the more conservative value will be chosen.

[52] Non-exhaustive examples: the debtor has guaranteed fully or partly the exposure of another counterparty or pledged collateral in favour of another counterparty; the debtor relies heavily on its another company in the group's distribution network to get access to its customers; the group is one of the debtor's main customers; the debtor extensively uses the group's infrastructure in its value chain; the group and the debtor may share the same brand.

Guidance for forecasting: EBITDA

The NCA bank team will derive EBITDA along the following structure	
	Revenues
-	Cost of sales
-	Distribution costs
-	Administrative expenses excl. depreciation/amortisation
-	Payroll taxes
+/-	Other gains/losses
=	**EBITDA**

Generally, the NCA bank team's forecasts are expected to be based on 2013/2012 figures. Where the NCA bank team's estimates deviate from historic figures (e.g. adjustment for high one-off revenues) the NCA bank team will make appropriate notes to justify assumptions in the template provided.

As a first step, the NCA bank team will forecast *Revenues*. Then, the NCA bank team will take effects on *Cost of sales*, *Distribution costs* and *Administrative expenses excl. depreciation/amortisation* into account.

The NCA bank team will neutralise one-off positions included in Other gains/losses as per the financial statement of the debtor (on a best-efforts basis based on available information). Examples include:

- Gains/losses from financial asset valuation;
- Effects of changes in foreign exchange rates;
- Positions typically reported under Other Comprehensive Income.

This does not apply to frequent one-offs, e.g. for a company that has one-off integration costs in each financial statement.

The NCA bank team will adjust previous year cash flows if there are known exceptional changes to cash flows, e.g. when the debtor has gone into liquidation.

Guidance for forecasting: cash flow adjustment

The NCA bank team will derive the Cash flow adjustment along the following structure	
-	Income tax expense
-	Owner's remuneration/"essential dividends"
-	Required capital expenditure (CAPEX)
=	**Cash flow adjustment**

Generally, all positions are expected to be derived from 2013/2012 figures.

Income tax expense is defined as Profit Before Income Tax * Effective Income Tax Rate. The NCA bank team will estimate the Effective Income Tax Rate and Profit Before Income Tax as follows:

- *Effective Income Tax Rate* will be forecasted in line with typical income tax rates in the jurisdiction and the NCA bank team's experience.
- *Profit Before Income Tax* is defined as *EBITDA - Net interest expense - Depreciation.* Both net interest expense and depreciation will be constant as per 2013/2012 figures unless there are significant one-off effects (e.g. large depreciation of tangible assets due to technology change).

The NCA bank team will deduct *Owner's remuneration/"Essential dividends"* from cash flows. Examples are where the owner(s) of the firm require(s) a minimum payout to make a living, or where the controlling shareholder depends on parts of the dividends to avoid default.

The NCA bank team will also deduct the minimum annual CAPEX required to maintain the cash flows of the operation. NCA bank teams will use their experience and typical CAPEX levels in the respective industry to derive the estimate.

Guidance for forecasting: sustainability adjustment

The NCA bank team will – on a best efforts basis – apply conservative adjustments to the cash flows where the forecast based on previous year data does not yet lead to a sustainable level of cash flows due to financial accounting choices/methodology (on a best-efforts basis based on available information). This is the case, e.g. when reversals of provisions improve results; these effects will be neutralised. Examples are:

- Negative or very low funded pension scheme contribution (flow);
- Negative or very low IAS 37 provision flow (in particular for guarantees provided);

- Negative or very low IAS 39 provision and write-off flow for receivables.

As a general rule, the NCA bank team will apply the following multiples M on CF_S unless the NCA bank team deems the multiples provided to be inappropriate in the individual case, in which case an explanation should be provided around why they are inappropriate.

Multiples	
Infrastructure:	12
Utilities:	10
Other exposures:	6

These multiples are consistent with standard market practice and reflect the level of gearing of operational cash flows that can feasibly achieved over a medium term horizon whilst maintaining a debt service coverage ratio above 1. Where the NCA bank team deems the multiples provided to be inappropriate for an individual case, the NCA bank team will draw on market practices and the NCA bank team's experience to derive a debt capacity (not equity valuation) multiple reflecting the most likely outcome.

Multiples are expected to be similar within the same industry and the same geography and will be challenged by cross-validation as part the of QA process.

Example

The NCA bank team obtains 2013 and 2012 financial data for the debtor, an industrial firm and performs the following analysis.

CFS is therefore €7,746. The NCA bank team applies a multiple of 6.

PV Operating Cash Flows (Debtor) = €7,746 * 6 = €46,476.

	Forecast item	2012	2013	Forecast	NCA Bank Team's comments
	Revenue	100,000	103,095	103,095	Assumed to be quite stable and kept these constant from 2013
-	Cost of sales	-70,233	-72,959	-72,959	
-	Distribution costs	-10,198	-10,172	-10,172	
-	Administrative expenses excl. depreciation/amortisation	-4,203	-4,307	-4,307	
+/-	Other gains/losses	-609	-1,117	-493	Notes to other gains/losses analysed. Only gains/losses relating to FX transaction costs kept (not FX conversion effects) and other business related expenses and miscellaneous gains/losses as these have been net negative given no further information available
=	**EBITDA**	**14,757**	**14,540**	**15,164**	**(Sum)**
-	Income tax expense	-2,185	-2,275	-2,441	Profit before tax * tax rate
-	Dividends & minority interest	-4,968	-5,075	0	Could theoretically be reduced to zero
-	CAPEX	-4,990	-5,611	-4,617	Based on previous years' CAPEX and reduced to a perceived minimum level based on a Revenue/CAPEX analysis of similar firms
=	**Cash flow adjustment**	**-12,143**	**-12,961**	**-7,058**	**(Sum)**
-	Low pension scheme contribution (flow)			-205	Neutralised net provision reductions in 2013 relating to environment and product liability charges and reversals in pension liabilities
-	Low outflows guarantees provided/contingent liabilities			-155	
-	Low provision and write-off flow for receivables			0	(not applicable)
=	**Sustainability adjustment**			**-360**	**(Sum)**
=	**Total cash flow**	**2,614**	**1,579**	**7,746**	**(Sum)**

Example					
	Profit before tax	9,601	9,546	10,170	2013 Profit before tax adjusted for changes in EBITDA
	Tax rate	22.8%	23.8%	24.0%	Discussed with the relevant experts

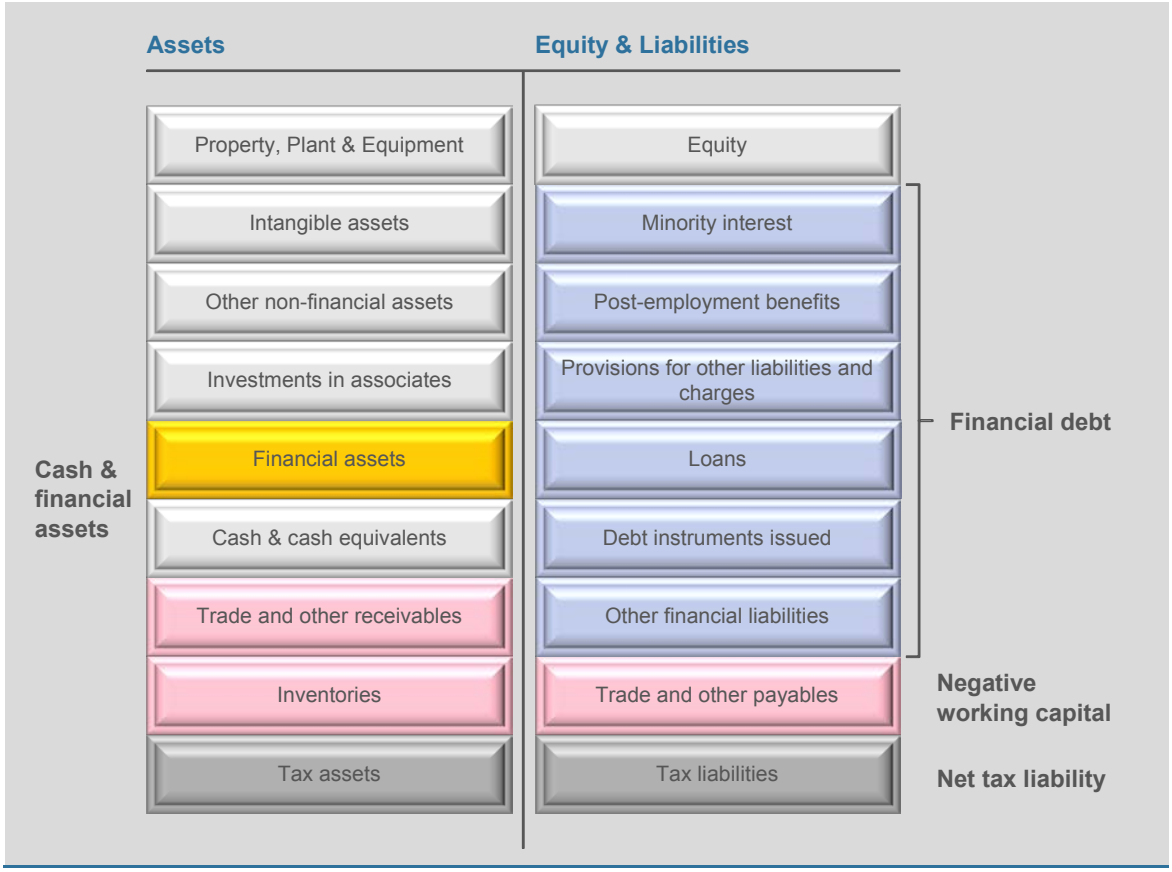
4.6.4.2 Allocation of cash flows to claims

To allocate the present value of operating cash flows to claims, the NCA bank team will derive the effective seniority ranking of a significant bank's claims for each exposure of the significant bank. Then the NCA bank team will allocate the present value of cash flows as well as non-pledged cash and non-pledged assets to all claims based on the ranking.

NCA bank team will conduct the ranking for claims within Financial debt, Negative Working Capital, Net tax liability and Conservative adjustment. These are defined as follows:

- *Financial debt*: All borrowings, financial liabilities and minority interest.
- *Negative working capital:* Excess of trade and other payables over trade and other receivables and Inventories; zero otherwise. Pledged assets are not deducted.
- *Net tax liability:* Excess of tax liability over tax assets (going concern); tax liability (gone concern); zero otherwise.
- *Conservative adjustment:* NCA bank teams will – on a best efforts basis – adjust for claims not or not entirely reflected on the balance sheet of the debtor due to accounting methodology or rules (e.g. finance leases with nGAAP debtors, inadequate stock of pension scheme contribution, guarantees provided/contingent liabilities without or with insufficient provision).

Figure 20 Claims and debtor asset categories



The NCA bank team will analyse the balance sheet of the debtor and all information about seniority and legal structure available to derive the effective seniority of all these claims. If no information is available, a conservative estimate of effective seniority will be made. Claims need to be ranked according to effective seniority, taking into account (non-comprehensive examples):

- Residual maturity of claims;
- Some debtors are treated as preferred in a jurisdiction (e.g. employees, tax authorities);
- The legal structure of the debtor can lead to effective seniority of some exposures over others (e.g. a loan to an operating company within a Group can have a preferred claim on that operating company's cash flows).

In going concern cases, consideration should be given as to whether equity and subordinated holders can realistically be fully wiped out, or whether some value needs to be attributed to them.

Seniority analysis can also be based on bank's internal papers, restructuring agreements, reviews etc where these seem reliable. The NCA bank team can also be guided by the bank's internal assumptions, subject to appropriate challenge.

As the next step, the NCA bank team will determine the total amount for allocation, which is defined as

AA = PV Operating Cash Flows (Debtor) + non-pledged cash + non-pledged financial assets

Then, the NCA bank team will allocate *AA* to each exposure following the order of effective seniority. The present value of total cash flows will be allocated to total net claims according to their effective seniority rank. For claims on the same rank, a pro-rata allocation is to be assumed.

The *Cash Flow Value*$_{0,i}$ for exposure i will therefore be derived as follows:

Cash Flow Value$_{0,i}$ = min (max (AA – Preferred claims$_i$, 0)/(Exposure$_i$ + Pari passu claims$_i$), 1) * Exposure$_i$

Where

- *Exposure*$_i$ is the exposure amount of the significant bank for exposure i;
- *Preferred claims*$_i$ are claims to the same debtor with a high (better) effective seniority rank
- *Pari passu claims*$_i$ are claims to the same debtor with the same effective seniority rank

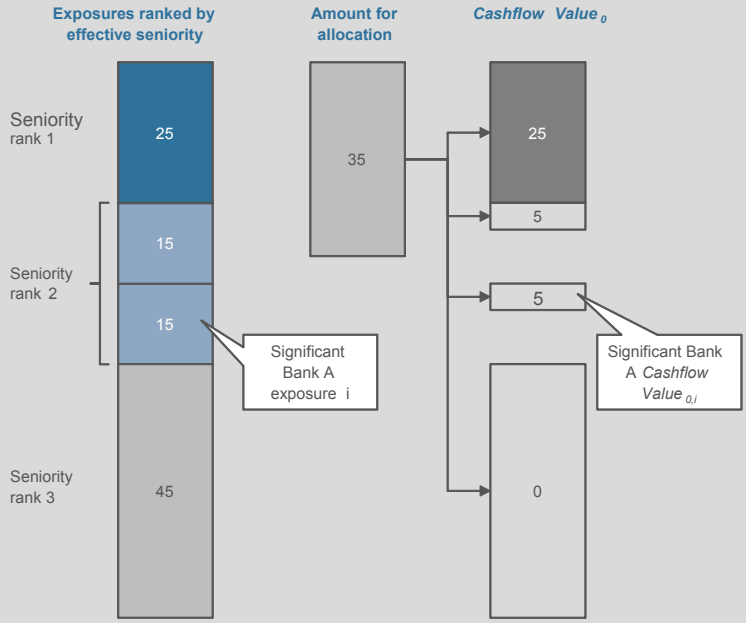
The Recoverable Amount is the *Cash Flow Value0,I + the Recoverable Amount from Collateral that is not central to cash flow generation. The Recoverable Amount from Collateral will be derived in line with the guidance in Section 4.6.1.*

Example

Exposure i, €15, seniority rank 2

Claims of other creditors of €25 are more senior, €15 are pari passu, €45 are less senior.

The amount for allocation (€35) is distributed to seniority rank 1 first. Then, the residual €10 are shared pro-rata between all exposures on seniority rank 2 (i.e. €5 + €5).



Seniority rank 3 exposures get zero allocation.

The debtor has pledged governments bonds in favour of Exposure i worth €3.

The Recoverable Amount is therefore €5 + €3 = €8. The required impairment is €15 - €8 = €7.

4.6.5 TWO-STEP DISCOUNTED CASH FLOW APPROACH

The present value of cash flows to the significant bank for exposure i (*Cash Flow Value*$_{0,i}$) will be derived as follows:

- First, estimate the cash flows of the debtor by conducting a DCF analysis.
- Then, the NCA bank team will forecast the cash flows to the significant bank for each exposure based on the effective seniority. Cash flows will be discounted to obtain the present value.

The NCA bank team will conduct a DCF analysis only where reliable cash flow projections are available. Where these cannot be obtained, the one-period cash flow approach is to be used. Cash flow projections will be challenged in the QA process.

To estimate the present value of cash flows of the debtor, the NCA bank team will follow the widely used two-step DCF-approach: (1) a period-by-period cash flow analysis followed by (2) an estimation of the terminal value:

- The length of the projection in Step 1 should be restricted to the length of the reliable cash flow projection or the term of shortest term non-revolving exposure to the significant bank, whichever is the shorter – but 3 years at minimum. The length of the projection should not be more than 10 years. Cash flows from the liquidation of collateral not central to the cash flows will be derived according to the guidance in Section 4.6.1 and added to those cash flows (i.e. drawing upon asset valuation as described in Chapter 5, unless there is a pre-agreed forward sale price).
- The terminal value (Step 2) should be calculated by deriving sustainable one-period cash flows at the end of the projection and applying a multiple as described in the steady-state cash flow approach or by assuming a 'gone concern' situation.

Then, for each period, cash flows will be allocated to each claim of all creditors as described in Section 4.6.4.2. Cash flows allocated to the claims of the Signification Bank will be discounted to determine the present value using the Effective Interest Rate for the respective exposure to the debtor.

IAS 39,Para G63 (EU)	*[…] the present value of estimated future cash flows […] discounted at the financial asset's original effective interest rate (i.e. the effective interest rate computed at initial recognition). […]*

Example

Exposure of €200 to project debtor X. Effective interest rate is 7%, residual maturity is 8 years. The loan is part of a syndicate loan of €800 in total. The project is still in development and needs two more years of investments. The outstanding committed credit line of €200 (Bank A share of €50) is expected to be drawn in full over the two years to cover the required investments.

During forbearance measures an updated cash flow projection has been produced by the lead manager of the syndicate. The liquidation value of the project is expected to be €400 at T=10. The NCA bank team verifies the assumptions and considers the projections as the most likely outcome.

T	1	2	3	4	5	6	7	8	9	10
Operating CF	-100.0	-100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Liquidation value										400.0
Senior creditors			100.0	100.0						
Bank A	-25.0	-25.0			25.0	25.0	25.0	25.0	25.0	125.0
Other syndicate banks (pari passu)	-75.0	-75.0			75.0	75.0	75.0	75.0	75.0	375.0

The NCA bank team estimates the cash flows to each creditor according to effective seniority. The social security debts are expected to be repaid first, then the banking syndicate.

The Recoverable Amount (present value of positive flows to Bank A discounted at 7%) amounts to €141.7. The total exposure is €200 + €45.2 (present value of future drawn amounts) = €245.2.

Total provisioning of €245.2 - €141.7 = €103.5 is required (thereof IAS 39 impairment of €103.5 * €200/€245.2 = €84.4 and IAS 37 provision of €103.5 * €45.2/€245.2 = €19.1)

4.6.6 EXPEDIENT USING OBSERVABLE MARKET PRICE

NCA bank teams may derive the present value from cash flows through using an observable market price. In this case, the going concern approach analysis described in the previous Sections is replaced by the market price expedient described in this Section.

IAS 39, Para AG84 (EU) — *[…] As a practical expedient, a creditor may measure impairment of a financial asset carried at amortised cost on the basis of an instrument's fair value using an observable market price. […]*

The NCA bank team will take into account the maturity of the exposure and ensure the applicability of the market price to the exposure by reviewing the following criteria:

- Issuer/debtor;

- Effective seniority;
- Current price available;
- Embedded options;
- Collateralisation of the traded instrument;
- Other criteria as within standard IFRS/NGAAP practice.

If the NCA bank team chooses not to use an available market price, the NCA bank team will nevertheless compare the results from the going concern approach to the market price based approach. If the Recoverable Amount from the going concern approach is more than 10% higher from the market price based expedient, this will be flagged by the NCA bank team and will be fully challenged by NCA QA teams and CPMO to ensure DCF assumptions are not overly optimistic.

Example

Exposure of €100 to debtor X. Effective interest rate is 7%, residual maturity is 2 years

Several bonds of debtor X have quoted prices. The NCA bank team retrieves the following information from the market data provider:

	Bond X	Bond Y	Bond Z
Coupon	8%	8%	12%
Residual maturity	1Y	5Y	2Y
Dirty price/Nominal	92.0%	60.0%	55.0%
YTM	17.4%	22.0%	54.0%
Seniority	Senior	Senior	Junior

The NCA bank team excludes the junior bond from the following analysis as the exposure is senior unsecured

The interpolated yield to maturity for 2 years is 18.5%. The estimated value of the loan is the contractual cash flow of the loan, discounted with 18.5%, which equals 82.1% of the nominal.

Based on the market price, the required impairment would be €100 - €82.1 = € 17.9

Note: This is only an example for using observable market prices. The NCA bank team will need to determine the best practical valuation method in the respective case.

4.7 IMPLICATIONS OF FINDINGS FOR CAPITAL CALCULATION AND PROVISIONING GOING FORWARD

Once the Credit file review of the sample is completed, a list of findings and adjustments will be available for each sampled file. Where in doubt, deviations should be discussed with bank

management to ensure information that is central to the findings has not been missed or misunderstood.

The final findings for the sample will ultimately be communicated to the bank and be expected to be incorporated in future accounts (to the extent deviations still exist) following completion of the CA (no disclosure of findings apart from clarifying deviations will tape place).

In addition, the specific findings from the sample should be translated into generalised findings that might have a wider bearing on the capital and provisioning calculations going forward (e.g. higher future provisions from a more conservative provisioning policy). This may include:

- Change to policies (e.g. frequency of collateral valuation)
- Improvements to processes (e.g. for impairment classification)
- Change to analytical approaches e.g. distinction between gone and going concern DCF analysis
- Improved data quality

Please also refer to Section 9.6 for further examples from other areas of the exercise.

4.8 OUTPUTS

The overall objectives of the credit file review are:

- To identify areas where the bank does not apply its own policies (or minima defined for the purposes of the AQR)
- Quantify deviations to allow projection of findings and determination of an AQR-adjusted CET1%
- Identify misclassifications of exposures, supplementing findings from DIV workblock
- Identify any required changes to bank processes and policies

The following output will need to be produced for this workblock:

Table 39 Outputs for credit file review

Workblock	Output
4. Credit file review	• Complete T4B. Credit file review findings template • O4B PowerPoint presentation describing any remedial action the bank should take as a result of credit file review

5 COLLATERAL AND REAL ESTATE VALUATION

As part of the credit file review, it is necessary to ensure that physical asset valuations (e.g. real estate, aircraft, ships, artwork) used in the assessment of provisions or carrying values of on-balance sheet assets are appropriate. To do so, collateral values will be updated – either by having collateral revalued by a third party expert, or by updating a recent independent, external market valuation. The following chapter describes the process and methodology for the update to collateral valuation

5.1 SUMMARY OF THE APPROACH

- All physical assets should be valued on the basis of market value i.e. the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion;
- The following appraisals qualify – otherwise an independent, external valuation should be carried out (subject to materiality constraints described in Section 5.4);
  - For the asset in question, an existing market valuation by an independent, external appraiser since 1st Jan 2013 exists. These assets may be indexed to 31 December 2013 based on indices proposed by the NCA and agreed with CPMO by March 14th 2014;
  - For the asset type in question, an existing market valuation by an independent, internal appraiser is available subject to the adjustment described in Section 5.4;
- The NCA bank team the NCA hires to carry out the wider credit file review may have sufficient expertise to carry out this analysis, though typically, in exercises of this sort, the appraisal can be handled more efficiently by a specialist firm. NCAs will provide a list of specialist firms to be used to NCA bank teams for process efficiency;
- Real estate should be valued in line with European Standards EVS-2012 (Blue Book) and other international standards such as the Royal Institute of Chartered Surveyors (RICS) guidelines – where a conflict is seen EVS2012 will apply (for the avoidance of doubt – this should be considered to apply throughout the document). For the avoidance of doubt a full e.g. RICS report is not required. Desk based valuations are expected to be carried out. Internal inspections are not expected. Drive by inspections may occur in circumstances where a desk based valuation is not viewed as sufficient by the NCA bank team. In some jurisdictions this may be considered as a "plausibility check" on valuations rather than a

fully-fledged valuation. Any third party revaluation should be carried out under the instruction of the NCA;

- Shipping and aviation valuations should be based on industry benchmarks by type of asset, adjusted for distortions in industry benchmarks created by parties that transact above market value (e.g. manufacturers looking to defend residual values) and where relevant unusual characteristics of assets. For vessels/aircraft on long term charter to investment grade counterparties, a DCF valuation may be used. All valuations should be in EUR. Any third party revaluation should be carried out under the instruction of the NCA;
- Other, more esoteric, physical assets that form a material amount of the collateral for a particular debtor (e.g. art work, cars, rolling stock etc.) should also be valued by an independent, external appraiser, though this may be appointed by the bank. However, in these circumstances, the purpose of the valuation must be made clear to the third party appraiser;
- Where an NCA considers that the valuation approach used as a standard in the country is more conservative than implied by a market valuation, the prevailing valuation approach may be applied. Before allowing local approaches the NCA will need to demonstrate to the ECB's satisfaction in written form that the local approach is conservative in all relevant cases. For the avoidance of doubt, mortgage lending value may only be used for real estate in cases where it is explicitly less than market value in all cases;
- The market valuation of collateral is to be performed and recorded prior to any adjustments made within the provisioning calculation (going concern/gone concern decisions);
- Where appraisal results do not differ more than 5% of indexed December 2013 values, these differences can be neglected for further analysis;
- Where currency conversion is required, the exchange rates used for 31 December 2013 financial reporting will be used

5.2 INDICATIVE TIMELINE

Table 40 Indicative timeline for collateral and real estate valuation

Task	Indicative date[53]
Discussion between ECB and NCA on valuation assumptions	14 March 2014
Commence revaluation of on-balance sheet assets	From 14 March 2014
Collateral revaluation process for Priority debtors	28 March – 18 April 2014
Commence collateral revaluation process for remaining sample	18 April 2014
Complete collateral revaluation	**6 June 2014**

5.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 41 Template for physical assets revaluation

Template	Summary of contents	Frequency of submission to CPMO
T5 Collateral and real estate valuation template	Template to capture information around collateral revaluations	Weekly submission of WIP template

5.4 REQUIRED OPERATING PROCESS TO CARRY OUT REVALUATION

The process for carrying out collateral valuation will be as follows:

- NCA´s will be asked to work with third party appraiser to provide transparency around key assumptions (yield, valuation per unit area, discount rates for hope value etc.) for the home market of the NCA. As for those non-SSM markets, where significant banks have material real estate related portfolios the NCA bank team can provide this information if they have the required internal experience and third parties support is not feasible in the tight timetable set. Geographies accounting for less than 5% of the carrying amount of foreclosed or collateral assets for a particular portfolio can be neglected. NCAs should ensure these assumptions are local market related, up to date, comprehensive and appropriate – this may require support from relevant third parties if the NCA does not have internal experience. The output should take the form of a presentation to the ECB during March 2014. The presentation should cover the following topics:

[53] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones

- If relevant, justification of the use of local valuation methods over RICS/EVS market value (i.e. demonstrating conservatism);
- Ranges of benchmark yield assumptions by relevant dimensions (property type [i.e. office, retail etc.], region, quality of property, ship type etc.);
- Ranges of benchmark valuation per unit area by relevant dimensions (property type [i.e. urban land without planning, agricultural, office, retail etc.], region, quality of property);
- Ranges of discount rates and time horizons to be applied for hope value[54] by relevant dimensions;
- Benchmark ranges as required for gone concern approach of credit file review (e.g. time to liquidation);
- At the NCA's discretion, market specific guidelines how to incorporate property specific features through, for example, adjustments of yields (for example use of automated valuation tools, property rating models etc).

- Re-appraisal of collateral and foreclosed assets will not be required if the asset in question has been appraised by an independent, external party using a market value approach in the last 12 months. These assets may be indexed to 31 December 2013 based on indices proposed by the NCA and agreed with CPMO by March 14th 2014;
- In addition, for foreclosed assets, the sales price can be used if the asset was sold between 31 Dec 2013 and the beginning of the exercise. It will be the responsibility of the NCA bank team to verify any of this is the case before the need for reappraisal is dismissed;
- Re-appraisal of the collateral with the smallest value for each debtor/economic group will also not be required if the asset in question has been appraised by an independent, internal appraiser using a market value approach in the last 12 months, subject to the following exclusions.
  - At least 50% of collateral (by value of collateral) for each debtor must be valued by an external appraiser if an internal independent valuation is available.
  - Where external valuations are found to be more than 5% below internal valuations, a haircut is applied to the independent internal valuation of collateral that does not have an external appraisal. The haircut should be equal to the level of correction applied to the collateral items that have been re-valued by an external appraiser.

[54] Hope value refers to potential increase in value achieved through investing in improving the aspect of a property e.g. completing development of partially completed office building.

- For property valued by an independent internal appraiser that is selected to be valued by an external appraiser, a check should be performed after the valuation of the first 50 properties in a portfolio. If the average external valuation is greater than 97% of the indexed internal valuation then no further external valuations are required and the internal valuation may be accepted.
- For the avoidance of doubt, an indexation is not a new valuation.
- The operational process for revaluing collateral for the purpose of the credit file review should be as follows:
  - Significant banks will be requested to fill a focused data request on debtors and the respective collateral in the sample (see template T4A and Section 4.4);
  - Collateral items for review will need to be selected by NCA bank teams, relating specifically to the debtors that are sampled. For debtors in the sovereign, institutional and corporate AQR segments, revaluation of collateral is only required if there is evidence for impairment or if future losses are more likely than not. At least 50% of collateral items (by value) relating to a debtor should be reappraised by a third party if an independent internal valuation is available – in addition all collateral items worth >€10MM should be reappraised. At least 90% of collateral items (by value) relating to a debtor should be reappraised by a third party if an independent internal valuation is not available – in addition all collateral items worth >€1MM should be reappraised. Valuations should be focused on the most valuable items. Collateral items with a recent valuation (see conditions in one of the next paragraphs) will count towards revaluated items;
  - After selection of items for review, collateral would need to be allocated to third party providers of appraisal services appointed by the relevant NCA (if not carried out by the NCA bank team performing the wider review). The NCA bank team will need to provide the relevant basic information that will be required by the appraiser to carry out the appraisal as soon as is feasible after the loan sample has been selected. The NCA bank team will then need to provide access to follow up information/individuals within the bank in order to allow the appraiser to complete the review;
  - The appraiser provides the results by filling a line per item on template T5. For some items, a report needs to be provided as additional justification (see Section 5.6.2);
- Operational process for revaluing foreclosed assets:
  - Banks will be requested to fill the relevant fields on template T5 (marked as to be filled by the Significant Bank).

- The NCA bank team will select a sample of on-balance sheet foreclosed real estate for reappraisal as part of the level 3 fair value exposures review. Geographies accounting for less than 5% of the carrying amount of foreclosed assets can be neglected. The sample will include the following:
  - The top ten assets (by carrying amount) in each of the following property classes (where they exist): residential property; commercial: income-producing; commercial: in development; land;
  - A random sample of 100 properties not included in the above (to the extent 100 exist);
- If the re-appraisal valuations are on average significantly lower (i.e. by more than 10%) than the bank's valuation, then the bank should be required to have an independent, external party reappraise the entire foreclosed real estate portfolio following the completion of the comprehensive assessment;
- Other than that, the operational process for foreclosed assets is the same as for the purposes of the credit file review (last two bullet points).

- If the appraiser is a different party to the NCA bank team carrying out the wider review, they will need to feed results back to the NCA bank team to allow provisioning deviations to be determined and level 3 asset valuations to be adjusted.
- Multiple properties in the same building may be valued in aggregate where appropriate.
- Where appraisal results do not differ more than 5% of indexed Dec 2013 values, these differences can be neglected for further analysis.

5.5 INFORMATION REQUIRED FOR APPRAISAL

Significant banks will be requested to fill a focused data request on debtors and the respective collateral in the sample (templates T4A). Banks will separately need to provide a list of foreclosed assets to the NCA bank team for sampling.

This basic information will need to be provided by the bank to the NCA bank team (and thus to Appraisers). In addition, the Bank will provide the actual collateral documentation to avoid a two-stage process as part of the credit file review data submission.

If a bank is unable to provide the minimum information required by the appraiser for valuation, a value of 0 will be attributed to the collateral item.

5.6 REAL ESTATE VALUATION APPROACH

Real estate that has been revalued in the last 12 months on market value principles by an independent, external party may be indexed to 31 December 2013 based on indices proposed by the NCA and agreed with CPMO by 14 March 2014.

The remainder of this section focuses on how real estate should be revalued if a current independent, external party valuation from after 1Jan 2013 does not exist and the asset needs to be revalued for the purposes of the exercise.

For real estate that has not been re-valued according to market value principles in the last 12 months, real estate should be valued consistently with the principles of the European Standards EVS-2012 (Blue Book) – and other international standards, such as the Royal Institute of Chartered Surveyors (RICS) guidelines. More specifically, real estate valuation should be on the basis of market value. Market value is defined as the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion. All valuations should be in EUR. Risk premia should reflect the fact valuation is in EUR i.e. discount rates used in hope value calculations should reflect local market risk premia.

Valuations on the basis of depreciated replacement cost are not allowed – in situations where this approach may have been applied an alternative approach is described below. Valuation on the basis of net income attributable to the property (e.g. net income for a factory rather than the rental income) is also not allowed - in situations where this approach may have been applied, the appropriate provisioning level should be assessed using a going concern cash flow based approach (see Chapter on credit file review).

Where an NCA considers that the valuation approach used as a standard in the country is more conservative than implied by a RICS/EVS market valuation, then the prevailing valuation approach should be applied. Before allowing local approaches the NCA will need to demonstrate to the ECB's satisfaction in written form that the local approach is conservative in all relevant cases. For the avoidance of doubt, mortgage lending value may only be used in cases where it is explicitly less than market value.

Valuations will be carried out on a 'desk' basis without the benefit of internal inspection, but taking into account the specific location and external attributes of the property. Where relevant this may involve automated valuation approaches for residential and small ticket commercial (i.e. <€1MM valuation) properties. Quality of the location, construction and allocation of areas

should be taken into account. In some cases a drive by inspection may be indicated at the discretion of the NCA bank team.

NCA's will be asked to work with third party appraisers to provide transparency around key assumptions (yield, valuation per unit area, discount rates for hope value etc) for the markets relevant to the significant banks under their supervision. This should take the form of a presentation to the ECB during early March 2014 covering the following topics for the home market as well non-SSM markets where the significant bank of the NCA have material selected real estate portfolios:

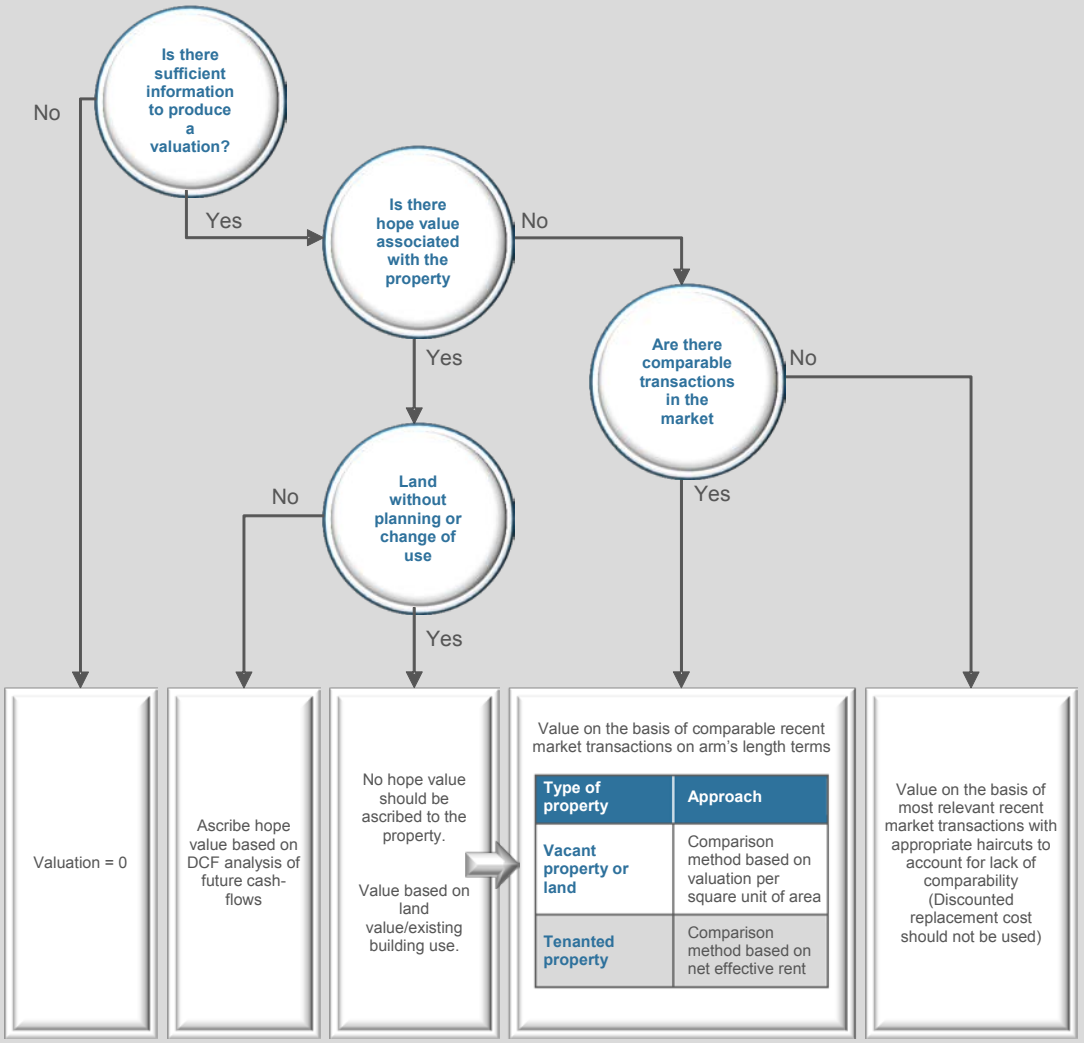
- If relevant, justification of the use of local valuation methods over RICS/EVS market value (i.e. demonstrating conservatism);
- Benchmark rental yield assumptions by relevant dimensions (property type [i.e. office, retail etc], region, quality of property) (see Section 5.6.1.1);
- Benchmark valuation per unit area by relevant dimensions (property type [i.e. Urban land without planning, Agri, office, retail etc], region, quality of property) (see Section 5.6.1.2); and
- Discount rates and time horizons to be applied for hope value by relevant dimensions (see Section 5.6.1.3).
- Other relevant factors for consideration in the file review (e.g. time to liquidation)

The ECB will provide feedback on these assumptions to ensure alignment across regions. This may involve challenging third parties to justify assumptions vis-à-vis other similar markets.

5.6.1 DECISION TREE FOR DECIDING VALUATION APPROACH

The decision tree below describes how market values should be assessed for the purposes of the AQR:

Figure 21 Decision tree for valuation purposes



The minimum information required to perform a valuation must be available, but not all data points are required in each case (e.g. actual rental income is required for tenanted property but not for vacant property or land). If the minimum required information cannot be provided, the valuation is 0.

For the avoidance of doubt, granular property price indices are not available for many small regions. In these circumstances the most appropriate index may be used to update recent external (and where relevant internal) valuations. A haircut of 20% (as per the decision tree above for situations where there are no comparables) is not required.

5.6.1.1 Comparable based valuation based on net effective rent

Valuation based on net effective rent is to be used when there is a long term rental agreement in place (i.e. >5 years) and/or the current rental agreement is judged to be consistent with market terms by the appraiser.

The valuation based on net effective rent relies on two key parameters:

- The yield
- The net effective rent

The valuation is then simply the net effective rent divided by the yield. The following aspects will be taken into account:

- For mixed properties, the valuation may be done on the basis of a 'sum of the parts' reflecting the difference in the rent and yield for each part;
- For leasehold properties, the valuation must be adjusted to reflect the value of the Freehold (i.e. the value of the freehold must be deducted to arrive at the value of the leasehold property).

Yield

The yield should be determined based on similar transactions in the market reflecting the specifics of the asset including:

- Risks associated with the rental agreement – in particular credit quality of the tenant;
- Characteristics of the surrounding area, and the availability of communications and facilities which affect value;
- Characteristics of the property; Dimensions and areas of the land and buildings;
- Construction of any buildings and their approximate age;
- Uses of the land and buildings;
- The apparent state of repair and condition;
- Environmental factors, such as abnormal ground conditions, historic mining or quarrying, coastal erosion, flood risks, proximity of high-voltage electrical equipment;
- Contamination, e.g. potentially hazardous or harmful substances in the ground or structures on it;
- Hazardous materials, such as potentially harmful material present in a building or on land; and
- Any physical restrictions on further development, if appropriate.

Yield ranges anticipated to be used in analysis will be provided by the NCAs to the ECB during early March. The actual yield ranges applied for the sample will be returned by the NCA's to the ECB together with the interim and final submissions of template T5 (i.e. the collateral valuation template). The level of detail required for yield ranges is shown below:

Table 42 Template for feeding back yield benchmarks (in %)

	Region 1 urban		Region 1 rural		Region 2 urban	
	Primary	**Secon-dary**	**Primary**	**Secon-dary**	**Primary**	**Secon-dary**
Single dwelling residential house						
Single dwelling residential apartment						
Multi-family home						
Social housing						
Industrial						
Office						
Retail						
Agriculture						
Other land (no planning permission)						
Other land (with planning permission for development)						

Approach to determining net effective rent

The approach to determining net effective rent must adjust for rent free and incentive periods and rental growth using a DCF approach. Net effective rent should be determined based on the total length of the agreement, not the remaining length. Any additional proceeds from over rental should also be taken into account. The approach is illustrated using the example below. Where the current rental agreement is judged to be inconsistent with market terms by the appraiser, this will be reflected in the valuation

Table 43 Illustration of net effective rent calculation	
Headline rent	€100,000 p.a.
Length of agreement at origination	10 years
Rent free period at origination	First 21 months (of 10 year term)
Capital contribution at origination	€50,000
Market yield (given nature of the contract)	7%
Present value of headline rent minus capital contribution (at 7% yield)	€ 516,390
Net effective rent (equivalent rent over 10 years with no capital contribution or rent free period)	€70,466 p.a.

5.6.1.2 Comparable based valuation based on unit of area

For vacant properties or properties with short term rental agreements that are out of line with market rents, the asset will be valued based on comparable transactions normalised for area. The valuation based on unit area relies on two key parameters:

- The area of the property
- The valuation per unit of area

The valuation is then simply the valuation per unit area multiplied by the area.

For mixed properties, the valuation may be done on the basis of a 'sum of the parts' reflecting the difference in the valuation per unit area of different parts of the property. For leasehold properties, the valuation must be adjusted to reflect the value of the Freehold (i.e. the value of the freehold must be deducted to arrive at the value of the leasehold property). Only the property size with potential value is aimed - therefore, property size can be assimilated to the usable size.

The valuation per unit area should be determined based on similar transactions reflecting the specifics of the asset including similar factors to those described in the section on Yield. As before, anticipated assumptions should be provided in March 2014 to ECB by NCAs and actual assumptions together with the interim and final submissions of template T5 (i.e. the collateral valuation template).

Table 44	Illustration of template for feeding back valuation per unit area benchmarks (m2)					
	Region 1 urban		**Region 1 rural**		**Region 2 urban**	
	Primary	**Secondary**	**Primary**	**Secondary**	**Primary**	**Secondary**
Single dwelling residential house						
Single dwelling residential apartment						
Multi-family home						
Social housing						
Industrial						
Office						
Retail						
Agriculture						

5.6.1.3 Valuation reflecting hope value

As discussed above, no hope value will be attributed to land without planning or in situations of 'change of use'.

For land with planning or ongoing developments, hope value may be ascribed based on a DCF analysis of the expected future cash flows, provided that a reasonable expectation of demand for the development can be demonstrated. If this is not the case, the property should be valued on the basis of comparable land transactions.

The DCF valuation involves projecting the cash flows from sales following development of the land (net of construction costs and any required infrastructure e.g. roads, utilities etc). The cash flows are projected in a conservative manner reflecting realistic time to develop and appropriately considering the likely future demand for the development. A simplified illustrative example is shown below:

Table 45 Illustrative example of valuation based on DCF for a residential property development							
Year	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
Stage of development	Mgmt	Urban	Urban	Construct	Construct	Sale	
Number of sq metres sold						100,000	
valuation per square metre (€/m2)						1,250	
Cash flow (€MM)	-5	-10	-10	-15	-15	120	65
Discount rate	17%	17%	17%	17%	17%	17%	
Discount multiple	0.83	0.69	0.57	0.47	0.39	0.33	
Discounted cash flow	(4.2)	(6.9)	(5.7)	(7.1)	(5.9)	39	9.4

The discount rate used for the DCF analysis should be based on the market experience of the appraiser. Each NCA in Europe will be asked to propose a set of discount rates (across the dimensions below) for all relevant countries for the AQR of the relevant banks for that NCA following input from third party experts during early March 2014. The parameters will be verified by the ECB in March 2014 before valuations begin:

Table 46 Minimum risk premia (%)				
Minimum risk premia	**Months for the development of the land (including sale)**			
	<40	**<80**	**<120**	**>=120**
Social housing/Council housing for first residence	???	???	???	???
Residential housing (first homes)	???	???	???	???
Residential housing (second homes), hotel, offices, commercial, elderly-care homes or student residence halls	???	???	???	???
Industrial, logistics, parking	???	???	???	???

As an indication, benchmarks for discount rates as a guide are provided below:

Table 47 Minimum risk premia benchmarks				
Minimum risk premia	**Months for the development of the land (including sale)**			
	<40	**<80**	**<120**	**>=120**
Social housing/Council housing for first residence	8%	9%	10%	11%
Residential housing (first homes)	10%	11%	12%	13%
Residential housing (second homes), hotel, offices, commercial, elderly-care homes or student residence halls	12%	13%	14%	15%
Industrial, logistics, parking	14%	15%	16%	17%

5.6.1.4 Valuation without comparables

Given the scope of the exercise, it is not perceived feasible to produce valuations on the basis of depreciated replacement cost at a reasonable level of accuracy and conservatism. As a result, if a property has no immediate comparables and no net income can be attributed to the property (i.e. a situation where a going concern cash flow based provisioning would be appropriate) then the appraiser is asked to apply the closest available comparable with an additional discount of 20% reflecting the inherent illiquidity of the property. The 20% are a benchmark to be used unless there is a strong reason for a higher discount.

5.6.2 STRUCTURE OF REPORT

The appraiser will be required to populate a table with a line on each property valued covering the following topics

- Debtor ID
- Collateral ID
- The subject of the valuation;
- The interest to be valued;
- The type of asset and how it is used, or classified, by the counterparty;
- The valuation date;
- Method used (comparable, hope value DCF, income)
- Property area
- Total net effective rent (if available)
- Average yield applied (if relevant)
- Average valuation per m^2
- (If hope value attributed) type of development, completed value, and time to completion

- (If net effective rent method) discount rate applied
- Disclosure of any material involvement, or a statement that there has not been any previous material involvement;
- The identity of the appraiser responsible for the valuation
- Any assumptions, special assumptions, reservations, special instructions or departures;
- A statement of the valuation approach and reasoning;
- The opinions of value in figures and words;

5.7 SHIPPING AND AVIATION

Shipping and aviation assets should be valued under the same market value principles as real estate; that is, on the basis of market value at point of sale. Market value is defined as the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.

Market value should be based on industry benchmarks for asset values by type such as Clarkson for shipping and Avitas for aviation. For aviation particular focus should be on airplane model, age and specifics around the engine and the fuselage. For shipping, focus should be on vessel type, size and age. It is critical that the reported values from these benchmarks should not be taken directly. Specific aspects around the asset in question should be taken into account, including crucially:

- Adjusting for specific characteristics of the asset that are not reflected in the benchmark that may have a material impact on price (e.g. time to next D-check and age of the fuselage for aviation);
- Adjusting for situations where benchmarks have been distorted from market value by transactions that do not meet the definition of "market value" above. For instance where manufacturers have transacted at above market value to maintain residual values so as not trip leasing covenants;
- Ships and planes under construction will be valued corresponding to the status of construction.

Where crucial information is missing, appropriate conservatism will be applied.

For ships and planes chartered to an investment grade charter party for >5 years, a DCF approach may be taken:

- The net effective charter rate during the charter period is discounted by the yield to maturity of a senior unsecured exposure to the charter party;

- A residual value is determined at the end of the charter based on market rates;

Similarly to real estate, a thorough review of the name level valuations should be carried out by the NCA ensuring that appropriate benchmarks have been applied for specific assets and that prudent adjustments have been made to these benchmarks. A template for delivering this information will be provided. The template will also be provided to the CPMO (T5).

5.8 OTHER ASSETS

Tax assets provided as collateral should be valued at 0.

For any other collateral, the bank should either provide a latest price for the collateral based on public market data for the specific asset (e.g. liquid bonds or equities) or the bank should provide an independent, external party valuation of the asset. Independent, external party valuations carried out in the last 12 months prior to December 2013 on the basis of market value will be acceptable. If an independent, external party valuation is not available the bank should have one carried out. The NCA bank team should verify a) that the chosen provider is qualified to carry out the valuation and b) the valuation is performed on the basis of market value.

For esoteric assets, such as artwork that is valued by the bank at more than €50MM, two independent, external party valuations should be commissioned by the bank and the lower of the two taken.

Appropriate documentation will be produced to support the valuations.

5.9 OUTPUTS

The objective of the workblock is to ensure all collateral values used in the credit file review or level 3 real estate review are up to date and consistent with market value.

The following output will need to be produced for this workblock:

Table 48 Outputs for Physical Asset Review workblock

Workblock	Output
5. Collateral and real estate valuation	Complete T5. Collateral and real estate valuation template

6 PROJECTION OF FINDINGS OF CREDIT FILE REVIEW

Once the credit file review is completed, the findings must be projected to the wider portfolio. Even though the sample sizes have been selected to ensure a reliable estimate of misstatement, it is essential that the projection of findings is performed with great care in a pragmatic way. This chapter outlines the approach to projecting findings, including all of the safeguards that will be applied to avoid overestimating the projection of misstatement – consistent with best audit practice.

6.1 SUMMARY OF THE APPROACH

- Projecting misstatements observed in the sample to the wider portfolio is essential - otherwise the impact of the misstatement would be underestimated, given the likelihood issues will exist in the wider portfolio;
- The specific metrics that will need to be projected are:
  - Impairment provisions;
  - NPE classification (only for use in collective provisioning);
  - Expected future loss on files where loss is more likely than not but no loss event trigger has been met;
- Note that no projection of collateral valuation changes is required
  - For debtors that are covered by credit file review this is not necessary as collateral value changes are already reflected in impairment provisions after the credit file review;
  - For debtors that are covered by collective provisions collateral value changes due to re-appraisal are projected as discussed in Section 7;
- Feedback from NCAs has been taken into account in designing the approach, to minimise the risk of overestimating the misstatement;
- The projection is based on the number weighted average observed misstatement for each analysed debtor (including debtors from group of connected clients that were not explicitly sampled) for each strata (following audit guidelines);
- The projection will be made by taking the average observed adjustment for each sampled stratum and applying the adjustment pro-rata to the un-sampled exposure in the stratum, subject to the following safeguards:

- Strata that are not sampled will have no projection applied to them. This means that in most retail portfolios, a very large percentage of the portfolio (by exposure) will not have a projection applied. For retail portfolios this might apply to up to 90% of the portfolio by exposure;
- If the misstatement is trivial, it should be excluded from projection of findings;
- If the adjustment stems from a single observation in the stratum, the observation will be checked to see if it is an anomaly, or if there are common features in relation to the observations that exist elsewhere in the sample. If no common features are found it is judged to be an anomaly and excluded from projection of findings;
- If the average misstatement for the stratum is more than 1 percentage point above the average misstatement for the risk strata, then it should be concluded that there is insufficient evidence to apply the average for the stratum and the average for the risk strata applies instead;
- If the total adjustment (observed and projected misstatement) is less than 5% of the post-adjustment parameter (provisions, NPE rate, etc.), then the adjustment will be viewed as insignificant relative to the error bound and therefore projection of findings will not be performed;

- In testing, these safeguards limit the potential for overstating misstatements dramatically at the cost of a slight expected underestimation in the projection of the misstatement on average;
- This approach is consistent with ISA 530.

6.2 INDICATIVE TIMELINE

Table 49 Indicative timeline for the projection of findings of the credit file review

Task	Indicative date[55]
Projections of findings of credit file review	**20 June – 27 June 2014**

6.3 INTRODUCTION

During the credit file review the NCA bank teams will draw conclusions that not only will be recorded on an individual file basis, but also constitute audit evidence of potential misstatements that have to be projected to the rest of the population, in accordance with the international

[55] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones.

standards on audit[56]. The correction of misstatements will be applied to the December 2013 Financial Statements in order to determine an "AQR-adjusted CET1%" ratio as an input to the stress test (see Chapter 9).

This following section describes the methodology to carry out the projection of misstatements. It largely leverages concepts and definitions explained in the sample selection section. Therefore its prior reading is recommended (see Section 3 above).

The main focus of the projection of findings is the provisioning levels of debtors that are assessed under the individual provisioning approach. For these segments, the adjustment of provisions concluded for the audited debtors will be projected to the rest of debtors, following the approach herein explained. For the avoidance of doubt, this adjustment will affect only exposures from the corporate portfolios, i.e. retail portfolios will not be adjusted by these means.

In addition to the provisioning levels, the same approach will be applied to project the adjustment of the EBA Simplified Approach NPE ratio. The NPE ratio adjustment will be projected for retail mortgage exposures as well as corporate exposures

6.4 REGULATORY BASIS

6.4.1 BASIS IN STANDARDS ON AUDITING

Standards on auditing from the *International Federation of Accountants* ("IFAC"), namely *International Standards on Auditing* ("ISA"), have been taken into account. In particular, the following are relevant considerations, summarised below:

ISA 530, A18	*The auditor is required to project misstatements for the population to obtain a broad view of the scale of misstatement but this projection may not be sufficient to determine an amount to be recorded.*

- The auditor is required to project misstatements.

[56] ISA 530, Paragraph 14: "For tests of details, the auditor shall project misstatements found in the sample to the population."

ISA 530, Appendix 1, Paragraph 3	*The results of audit procedures applied to a sample of items within a stratum can only be projected to the items that make up that stratum. To draw a conclusion on the entire population, the auditor will need to consider the risk of material misstatement in relation to whatever other strata make up the entire population. For example, 20% of the items in a population may make up 90% of the value of an account balance. The auditor may decide to examine a sample of these items. The auditor evaluates the results of this sample and reaches a conclusion on the 90% of value separately from the remaining 10% (on which a further sample or other means of gathering audit evidence will be used, or which may be considered immaterial).*

- The findings from a stratum can only be projected to the items of that stratum;
- Findings from strata that have not been reviewed because they are considered immaterial will have no projection applied to them.

ISA 530, Appendix 1, Paragraph 4	*If a class of transactions or account balance has been divided into strata, the misstatement is projected for each stratum separately. Projected misstatements for each stratum are then combined when considering the possible effect of misstatements on the total class of transactions or account balance.*

- Although the findings from a stratum can only be projected to the items of that stratum, the findings from all of the reviewed strata have to be combined to assess the possible effect of misstatements on the whole portfolio.

ISA 450, Paragraph 15	*The auditor shall evaluate whether uncorrected misstatements are material, individually or in aggregate. In making this evaluation, the auditor shall consider the size and nature of the misstatements, both in relation to particular classes of transactions, account balances and disclosures and the financial statements as a whole, and the particular circumstances of their occurrence.*

- The materiality of the misstatements will be assessed.

ISA 450, A1	*The auditor may designate an amount below which misstatements would be clearly trivial and would not need to be accumulated because the auditor expects that the accumulation of such amounts clearly would not have a material effect on the financial statement. "Clearly trivial" is not another expression for not material. Matters that are "clearly trivial" will be of a wholly different (smaller) order of magnitude than materiality used in planning and performing the audit, and till be matters that are clearly inconsequential, whether taken individually or in aggregate and whether judged by any criteria of size, nature or circumstances. Whenever there is any uncertainty about whether one or more items are "clearly trivial", it is presumed that the matter is not "clearly trivial*

- On an individual debtor basis, the auditor will ignore trivial misstatements.

ISA 320, Paragraph 11	*The auditor shall determine performance materiality for purposes of assessing the risks of material misstatement and determining the nature, timing and extent of further audit procedures.*

- At a portfolio level, a performance materiality will be defined in order to assess the materiality of the misstatement.

ISA 530, A7	*In considering the characteristics of a population, for tests of controls, the auditor makes an assessment of the expected rate of deviation based on the auditor's understanding of the relevant controls or on the examination of a small number of items from the population. This assessment is made in order to design an audit sample and to determine sample size. For example, if the expected rate of deviation is unacceptably high, the auditor will normally decide not to perform tests of controls. Similarly, for tests of details, the auditor makes an assessment of the expected misstatement in the population. If the expected misstatement is high, 100% examination or use of a large sample size may be appropriate when performing tests of details.*

- The auditor will estimate an expected misstatement;
- This assessment will be used to assess representativeness of the sample, for instance whether or not the sample size is appropriate.

ISA 530, A21	*For tests of controls, an unexpectedly high sample deviation rate may lead to an increase in the assessed risk of material misstatement, unless further audit evidence substantiating the initial assessment is obtained. For tests of details, an unexpectedly high misstatement amount in a sample may cause the auditor to believe that a class of transactions or account balance is materially misstated, in the absence of further audit evidence that no material misstatement exists.*

- A significant deviation from the expected misstatement may make the auditor believe that there is a material deviation, compared to the expectation.

ISA 530, A3	*When designing a sample, the auditor determines tolerable misstatement in order to address the risk that the aggregate of individually immaterial misstatements may cause the financial statements to be materially misstated and provide a margin for possible undetected misstatements. Tolerable misstatement is the application of performance materiality, as defined in ISA 320, 2 to a particular sampling procedure. Tolerable misstatement maybe the same amount or an amount lower than performance materiality.*

- The auditor will determine a tolerable misstatement to assess the materiality of the misstatement.

ISA 530, Paragraph 13

In the extremely rare circumstances when the auditor considers a misstatement or deviation discovered in a sample to be an anomaly, the auditor shall obtain a high degree of certainty that such misstatement or deviation is not representative of the population. The auditor shall obtain this degree of certainty by performing additional audit procedures to obtain sufficient appropriate audit evidence that the misstatement or deviation does not affect the remainder of the population.

- If the deviation of the observed misstatement and the expected misstatement is high, an anomaly might exist;
- The auditor will investigate whether that misstatement is representative of the population;
- Additional audit procedures may be used in this verification;
- The auditor may conclude that the cause for the anomaly does not apply to the remainder of the population so that it will not be projected.

ISA 530, A17

In analyzing the deviations and misstatements identified, the auditor may observe that many have a common feature, for example, type of transaction, location, product line or period of time. In such circumstances, the auditor may decide to identify all items in the population that possess the common feature, and extend audit procedures to those items. In addition, such deviations or misstatements may be intentional, and may indicate the possibility of fraud.

- During the review of potential anomalies, the auditor will look for common features or hints for intentionality or potential fraud;
- If these are found, additional procedures may be necessary.

ISA 530, A22

In the case of tests of details, the projected misstatement plus anomalous misstatement, if any, is the auditor's best estimate of misstatement in the population. When the projected misstatement plus anomalous misstatement, if any, exceeds tolerable misstatement, the sample does not provide a reasonable basis for conclusions about the population that has been tested. The closer the projected misstatement plus anomalous misstatement is to tolerable misstatement, the more likely that actual misstatement in the population may exceed tolerable misstatement. Also if the projected misstatement is greater than the auditor's expectations of misstatement used to determine the sample size, the auditor may conclude that there is an unacceptable sampling risk that the actual misstatement in the population exceeds the tolerable misstatement. Considering the results of other audit procedures helps the auditor to assess the risk that actual misstatement in the population exceeds tolerable misstatement, and the risk may be reduced if additional audit evidence is obtained.

- Once potential anomalies have been reviewed, the auditor will conclude whether the audit evidence is sufficient to carry out the projection of findings.

ISA 530, A23	*If the auditor concludes that audit sampling has not provided a reasonable basis for conclusions about the population that has been tested, the auditor may: (a) Request management to investigate misstatements that have been identified and the potential for further misstatements and to make any necessary adjustments; or (b) Tailor the nature, timing and extent of those further audit procedures to best achieve the required assurance. For example, in the case of tests of controls, the auditor might extend the sample size, test an alternative control or modify related substantive procedures.*

- If the auditor concludes that the sampling has not provided sufficient evidence, additional audit procedures may apply.

Additional standards have been taken into account are referred this section when relevant, in particular:

- ISA 200 – Overall objectives of the independent auditor and the conduct of an audit in accordance with International Standards on Auditing;
- ISA 315 – Identifying and assessing the risks of material misstatement through understanding the entity and its environment;
- ISA 320 – Materiality in planning and performing an audit;
- ISA 330 – The auditor's responses to assessed risks;
- ISA 450 – Evaluation of misstatements identified during the audit;
- ISA 500 – Audit evidence.

6.4.2 BASIS FOR THE COMBINATION OF THE RESULTS OF PROJECTION OF FINDINGS AND IBNR ASSESSMENT

One of the key specific characteristics of the assessment of performing corporate debtors is that the projection of specific impairment findings will be complemented with a collective analysis of IBNR. Although we recognise that such a combination is not common in auditing practice, it is used as an expedient measure in the AQR to ensure feasibility (as projection of specific impairment avoids the need for file review of every performing exposure). When a bank sets their provisions for individually assessed exposures they:

- Test each performing exposure for specific impairment through an individual file review
- Use a collective approach to determine IBNR for all exposures which do not require a specific impairment provision

Instead, in the AQR the first step is achieved via a sampling approach, the results of which are projected to the entire performing group. The exposure that is projected to be impaired is then removed from the collective provisioning approach, to avoid double counting of IBNR and specific impairment.

For clarification purposes let us use a simplistic numeric example. We have a stratum comprising 1,000 debtors each of them with an exposure of €1 MM. For didactic reasons, let us assume that none of these loans were impaired by the bank before the exercise. The selected sample of this stratum is formed by 100 debtors, and during the credit file review we find out that 10% of them are actually specifically impaired (for simplicity we can assume 100% impairment each). Accordingly, we individually reclassify the ten creditors that were actually reviewed. We then extrapolate our findings and determine that the need for provisions due to the projection of individual findings is €90 MM. As €900 MM of exposure has been found to have no specific impairment IBNR is required for this group, which is therefore the exposure used as an input to collective assessment for IBNR.

6.5 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 50 Illustrative models for projection of findings

Subject	Illustrative model/parameter sheet
Projection of findings	Step-by-step example of projection process on results of AQR

Table 51 Template for projection of findings

Template	Summary of contents	Frequency of submission to CPMO
T6 Projection of findings tool	• Tool that takes results of credit file review findings and projects findings for the unsampled exposure for the relevant portfolio • Results from template are used in the AQR-adjusted CET1% ratio template	At end of task

6.6 APPROACH TO PROJECTING FINDINGS

Before reading this section, terminology should be made clear:

- A stratum is a sub-segment of the portfolio with similar exposure size and risk classification – i.e. normal risk, exposure size bucket 1 would be an example of a stratum
- Strata is the plural of stratum
- A common risk strata is a group of strata with different levels of exposures but the same risk characteristics – i.e. normal risk, exposure size bucket 1 and normal risk, exposure size bucket 2 would both be in a common risk strata

- A common exposure strata is a group of sub-segments with different levels of risk but the same exposure characteristics – i.e. normal risk, exposure size bucket 1 and normal cure risk, exposure size bucket 1 would both be in a common exposure strata

The approach to projecting findings consists of eight steps. The steps are implemented in the Projection of Findings template. The eight step process is as follows

- Step 1 – Calculate misstatements for each debtor in the sample, differentiated by stratum
- Step 2 – Identify and remove clearly trivial misstatements
- Step 3 – Calculate simple average number weighted adjustment per stratum
- Step 4 – Calculate simple average number weighted adjustment per common risk strata
- Step 5 – Identify strata which show evidence of over or underestimation of misstatement based on statistical tests
- Step 6 – For strata with evidence of overestimation, perform checks to examine whether deviation is due to an anomaly
- Step 7 – Exclude confirmed anomalies
- Step 8 – Once anomalies are removed, for strata which do not show evidence of over or underestimation, project findings based on stratum average. For strata that do show evidence of over or underestimation, project findings based on common risk strata average
- Step 9 – Set projection of findings to zero, if the total misstatement (following projection of findings) is less than 5% of the post projection of findings estimate of provisions.

Please note that care must be taken when projecting the normal risk, exposure size bucket 1 due to the relatively low sample rate. If the finding is believed to significantly under or overestimate the misstatement then, given the low sampling rate in this stratum, expert judgement may be used to ensure the finding is appropriate. Any expert adjustment to the finding for normal risk, exposure size bucket 1 must be made with the explicit agreement of the CPMO.

Worked examples are shown in the following sub-sections for the calculation of misstatement for provision. The approach is the same for future loss and NPE misstatement projection except where explicitly noted.

6.6.1 STEP 1 – CALCULATE MISSTATEMENTS FOR EACH DEBTOR IN THE SAMPLE, DIFFERENTIATED BY STRATUM

Step 1 involves the calculation of the misstatement of each debtor in the sample, as a percentage of gross exposure

Figure 22 Calculation of provision misstatement

Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Required adjustment, as per the credit file review												
				1	2	3	4	5	6	7	8	9	10	11	12	13
Default >12M	5th Percentile	0	0%													
Default >12M	Bucket 1	13	0%	11%	0.1%	0%	0%	0%	10%	0%	0%	8%	9%	9%	0%	0%
Default >12M	Bucket 2	13	21%	10%	0%	0%	0%	0%	0%	77%	0%	0%	9%	0%	0%	0%
Default >12M	Bucket 3	13	65%	0%	0%	9%	0%	10%	0%	23%	0%	0%	0%	0%	0%	11%
Default >12M	Bucket 4	11	100%	0%	8%	0%	7%	0%	0%	0%	0%	0%	0%	0%		
Default >12M	Bucket 5	4	100%	0%	0%	9%	0%									
Default >12M	TOP10	10	100%	0%	10%	0%	0%	0%	9%	0%	0%	11%	0%			
Default <12M	5th Percentile	0	0%													
Default <12M	Bucket 1	13	0%	0%	0%	8%	0%	9%	11%	0%	20%	8%	0%	10%	0%	0%
Default <12M	Bucket 2	13	12%	9%	10%	0%	8%	0%	9%	0%	0%	0%	0%	0%	11%	0%
Default <12M	Bucket 3	13	37%	0%	0%	0%	11%	10%	0%	0%	0%	0%	10%	0%	0%	0%
Default <12M	Bucket 4	9	100%	0%	0%	0.1%	0%	10%	9%	11%	0%	12%				
Default <12M	Bucket 5	6	100%	0%	0%	12%	0%	10%	11%							
Default <12M	TOP10	10	100%	10%	9%	0%	10%	0%	0%	0%	8%	0%	11%			

6.6.2 STEP 2 – IDENTIFY AND REMOVE CLEARLY TRIVIAL MISSTATEMENTS

The next step involves removing any trivial provisioning adjustments, as illustrated in the figure below. Trivial misstatements are those of 1% or less of gross exposure.

Figure 23 Adjustment for trivial provisioning misstatement

Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Required adjustment, as per the credit file review												
				1	2	3	4	5	6	7	8	9	10	11	12	13
Default >12M	5th Percentile	0	0%													
Default >12M	Bucket 1	13	0%	11%	0%	0%	0%	0%	10%	0%	0%	8%	9%	9%	0%	0%
Default >12M	Bucket 2	13	21%	10%	0%	0%	0%	0%	0%	77%	0%	0%	9%	0%	0%	0%
Default >12M	Bucket 3	13	65%	0%	0%	9%	0%	10%	0%	23%	0%	0%	0%	0%	0%	11%
Default >12M	Bucket 4	11	100%	0%	8%	0%	7%	0%	0%	0%	0%	0%	0%	0%		
Default >12M	Bucket 5	4	100%	0%	0%	9%	0%									
Default >12M	TOP10	10	100%	0%	10%	0%	0%	0%	9%	0%	0%	11%	0%			
Default <12M	5th Percentile	0	0%													
Default <12M	Bucket 1	13	0%	0%	0%	8%	0%	9%	11%	0%	20%	8%	0%	10%	0%	0%
Default <12M	Bucket 2	13	12%	9%	10%	0%	8%	0%	9%	0%	0%	0%	0%	0%	11%	0%
Default <12M	Bucket 3	13	37%	0%	0%	0%	11%	10%	0%	0%	0%	0%	10%	0%	0%	0%
Default <12M	Bucket 4	9	100%	0%	0%	0%	0%	10%	9%	11%	0%	12%				
Default <12M	Bucket 5	6	100%	0%	0%	12%	0%	10%	11%							
Default <12M	TOP10	10	100%	10%	9%	0%	10%	0%	0%	0%	8%	0%	11%			

For NPE misstatement projection Step 2 can be omitted as no misstatements are trivial.

6.6.3 STEP 3 – CALCULATE SIMPLE AVERAGE ADJUSTMENT PER STRATUM

The next step is to calculate the sample average misstatement for each stratum, as illustrated below

Figure 24 Calculation of provision misstatement stratum average

Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Required adjustment, as per the credit file review 1	2	3	4	5	6	7	8	9	10	11	12	13	Stratum average
Default >12M	5th Percentile	0	0%														0.0%
Default >12M	Bucket 1	13	0%	11%	0%	0%	0%	0%	10%	0%	0%	8%	9%	9%	0%	0%	3.6%
Default >12M	Bucket 2	13	21%	10%	0%	0%	0%	0%	0%	77%	0%	0%	9%	0%	0%	0%	7.4%
Default >12M	Bucket 3	13	65%	0%	0%	9%	0%	10%	0%	23%	0%	0%	0%	0%	0%	11%	4.1%
Default >12M	Bucket 4	11	100%	0%	8%	0%	7%	0%	0%	0%	0%	0%	0%	0%			1.4%
Default >12M	Bucket 5	4	100%	0%	0%	9%	0%										2.3%
Default >12M	TOP10	10	100%	0%	10%	0%	0%	0%	9%	0%	0%	11%	0%				3.0%
Default <12M	5th Percentile	0	0%														0.0%
Default <12M	Bucket 1	13	0%	0%	0%	8%	0%	9%	11%	0%	20%	8%	0%	10%	0%	0%	5.0%
Default <12M	Bucket 2	13	12%	9%	10%	0%	8%	0%	9%	0%	0%	0%	0%	0%	11%	0%	3.6%
Default <12M	Bucket 3	13	37%	0%	0%	0%	11%	10%	0%	0%	0%	0%	10%	0%	0%	0%	2.3%
Default <12M	Bucket 4	9	100%	0%	0%	0%	0%	10%	9%	11%	0%	12%					4.7%
Default <12M	Bucket 5	6	100%	0%	0%	12%	0%	10%	11%								5.4%
Default <12M	TOP10	10	100%	10%	9%	0%	10%	0%	0%	0%	8%	0%	11%				4.9%

6.6.4 STEP 4 – CALCULATE SIMPLE AVERAGE ADJUSTMENT PER COMMON RISK STRATA

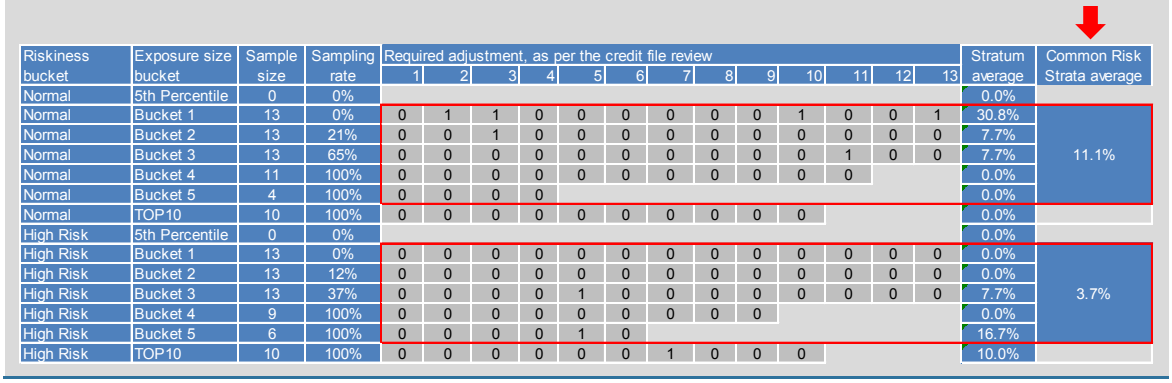
The next step is to determine the simple average misstatement for common risk strata – that is Strata that are in the same Riskiness bucket. The top ten (i.e. priority debtors) are excluded from the calculation.

Figure 25 Calculation of average provision misstatement for common risk strata

Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Required adjustment, as per the credit file review 1	2	3	4	5	6	7	8	9	10	11	12	13	Stratum average	Common Risk Strata average
Default >12M	5th Percentile	0	0%														0.0%	
Default >12M	Bucket 1	13	0%	11%	0%	0%	0%	0%	10%	0%	0%	8%	9%	9%	0%	0%	3.6%	4.1%
Default >12M	Bucket 2	13	21%	10%	0%	0%	0%	0%	0%	77%	0%	0%	9%	0%	0%	0%	7.4%	
Default >12M	Bucket 3	13	65%	0%	0%	9%	0%	10%	0%	23%	0%	0%	0%	0%	0%	11%	4.1%	
Default >12M	Bucket 4	11	100%	0%	8%	0%	7%	0%	0%	0%	0%	0%	0%	0%			1.4%	
Default >12M	Bucket 5	4	100%	0%	0%	9%	0%										2.3%	
Default >12M	TOP10	10	100%	0%	10%	0%	0%	0%	9%	0%	0%	11%	0%				3.0%	
Default <12M	5th Percentile	0	0%														0.0%	
Default <12M	Bucket 1	13	0%	0%	0%	8%	0%	9%	11%	0%	20%	8%	0%	10%	0%	0%	5.0%	4.0%
Default <12M	Bucket 2	13	12%	9%	10%	0%	8%	0%	9%	0%	0%	0%	0%	0%	11%	0%	3.6%	
Default <12M	Bucket 3	13	37%	0%	0%	0%	11%	10%	0%	0%	0%	0%	10%	0%	0%	0%	2.3%	
Default <12M	Bucket 4	9	100%	0%	0%	0%	0%	10%	9%	11%	0%	12%					4.7%	
Default <12M	Bucket 5	6	100%	0%	0%	12%	0%	10%	11%								5.4%	
Default <12M	TOP10	10	100%	10%	9%	0%	10%	0%	0%	0%	8%	0%	11%				4.9%	

Purely illustratively, the below figure is an example of the same procedure for NPE misstatements.

Figure 26 Calculation of average NPE misstatement for common risk strata



Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Required adjustment, as per the credit file review													Stratum average	Common Risk Strata average
				1	2	3	4	5	6	7	8	9	10	11	12	13		
Normal	5th Percentile	0	0%														0.0%	
Normal	Bucket 1	13	0%	0	1	1	0	0	0	0	0	0	1	0	0	1	30.8%	
Normal	Bucket 2	13	21%	0	0	1	0	0	0	0	0	0	0	0	0	0	7.7%	
Normal	Bucket 3	13	65%	0	0	0	0	0	0	0	0	0	0	1	0	0	7.7%	11.1%
Normal	Bucket 4	11	100%	0	0	0	0	0	0	0	0	0	0	0			0.0%	
Normal	Bucket 5	4	100%	0	0	0	0										0.0%	
Normal	TOP10	10	100%	0	0	0	0	0	0	0	0	0	0				0.0%	
High Risk	5th Percentile	0	0%														0.0%	
High Risk	Bucket 1	13	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
High Risk	Bucket 2	13	12%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
High Risk	Bucket 3	13	37%	0	0	0	0	1	0	0	0	0	0	0	0	0	7.7%	3.7%
High Risk	Bucket 4	9	100%	0	0	0	0	0	0	0	0	0					0.0%	
High Risk	Bucket 5	6	100%	0	0	0	0	1	0								16.7%	
High Risk	TOP10	10	100%	0	0	0	0	0	0	1	0	0	0				10.0%	

6.6.5 STEP 5 – IDENTIFY STRATA THAT SHOW EVIDENCE OF OVER OR UNDERESTIMATION OF MIS-STATEMENT BASED ON STATISTICAL TESTS

Statistical tests are used to highlight results that show evidence that misstatement is under or overestimated, based on comparison to Common Risk Strata average. The statistical tests are implemented in the excel template provided.

Figure 27 Identification of Strata that show evidence of overestimation of provisions

Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Required adjustment, as per the credit file review													Stratum average	Common Risk Strata average
				1	2	3	4	5	6	7	8	9	10	11	12	13		
Default >12M	5th Percentile	0	0%														0.0%	
Default >12M	Bucket 1	13	0.5%	11%	0%	0%	0%	0%	10%	0%	20%	8%	9%	9%	0%	0%	5.2%	
Default >12M	Bucket 2	13	21%	10%	0%	0%	0%	0%	0%	77%	0%	0%	9%	0%	0%		7.4%	
Default >12M	Bucket 3	13	65%	0%	0%	9%	0%	10%	0%	23%	0%	0%	0%	0%	0%	11%	4.1%	4.5%
Default >12M	Bucket 4	11	100%	0%	8%	0%	7%	0%	0%	0%	0%	0%	0%	0%			1.4%	
Default >12M	Bucket 5	4	100%	0%	0%	9%	0%										2.3%	
Default >12M	TOP10	10	100%	0%	10%	0%	0%	0%	9%	0%	0%	11%	0%				4.8%	
Default <12M	5th Percentile	0	0%															
Default <12M	Bucket 1	13	0.3%	0%	0%	8%	0%	9%	11%	0%	0%	8%	0%	10%	0%	0%	3.5%	
Default <12M	Bucket 2	13	12%	9%	10%	0%	8%	0%	9%	0%	0%	0%	0%	0%	11%	0%	3.6%	
Default <12M	Bucket 3	13	37%	0%	0%	0%	11%	10%	0%	0%	0%	0%	10%	0%	0%	0%	2.3%	3.7%
Default <12M	Bucket 4	9	100%	0%	0%	0%	0%	10%	9%	11%	0%	12%					4.7%	
Default <12M	Bucket 5	6	100%	0%	0%	12%	0%	10%	11%								5.4%	
Default <12M	TOP10	10	100%	10%	9%	0%	10%	0%	0%	0%	8%	0%	11%				5.2%	

6.6.6 STEP 6 – FOR STRATA WITH EVIDENCE OF OVER OR UNDERESTIMATION, PERFORM CHECKS TO EXAMINE WHETHER DEVIATION IS DUE TO AN ANOMALY

Three options exist for dealing with anomalies:

1. Anomaly is caused by missing information on the sampled file and is therefore considered as a complete misstatement. In this case, the projection will be computed excluding this misstatement and replaced with another debtor from the reserve sample;

2. Anomaly is considered an outlier and therefore is corrected or excluded from the projection of the misstatement (Ref: ISA530, Para. 13) and replaced with another debtor from the reserve sample;

3. If a common feature of the anomaly (Ref: ISA530, A17) is detected in the rest of the sample (e.g. collateral mis-valuation, failure to identify a concession etc.), the NCA bank team should not make any adjustment for the anomalous misstatement.

6.6.7 STEP 7 – ADJUST FOR CONFIRMED ANOMALIES

Once anomalies have been adjusted, the Strata and Common Risk Strata averages are updated, as illustrated below:

Figure 28 Adjustment for confirmed anomalies

Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Required adjustment, as per the credit file review													Stratum average	Riskiness bucket average
				1	2	3	4	5	6	7	8	9	10	11	12	13		
Default >12M	5th Percentile	0	0%														0.0%	
Default >12M	Bucket 1	13	0.5%	11%	0%	0%	0%	0%	10%	0%	20%	8%	9%	9%	0%	0%	5.2%	3.2%
Default >12M	Bucket 2	13	21.0%	10%	0%	0%	0%	0%	0%	10%	0%	0%	9%	0%	0%	0%	2.2%	
Default >12M	Bucket 3	13	65%	0%	0%	9%	0%	10%	0%	23%	0%	0%	0%	0%	0%	11%	4.1%	
Default >12M	Bucket 4	11	100%	0%	8%	0%	7%	0%	0%	0%	0%	0%	0%	0%			1.4%	
Default >12M	Bucket 5	4	100%	0%	0%	9%	0%										2.3%	
Default >12M	TOP10	10	100%	0%	10%	0%	0%	0%	9%	0%	0%	11%	0%				3.0%	
Default <12M	5th Percentile	0	0%														0.0%	
Default <12M	Bucket 1	13	0.3%	0%	0%	8%	0%	9%	11%	0%	20%	8%	0%	10%	0%	0%	5.0%	4.0%
Default <12M	Bucket 2	13	11.8%	9%	10%	0%	8%	0%	9%	0%	0%	0%	0%	0%	11%	0%	3.6%	
Default <12M	Bucket 3	13	37%	0%	0%	0%	11%	10%	0%	0%	0%	0%	10%	0%	0%	0%	2.3%	
Default <12M	Bucket 4	9	100%	0%	0%	0%	0%	10%	9%	11%	0%	12%					4.7%	
Default <12M	Bucket 5	6	100%	0%	0%	12%	0%	10%	11%								5.4%	
Default <12M	TOP10	10	100%	10%	9%	0%	10%	0%	0%	0%	8%	0%	11%				4.9%	

6.6.8 STEP 8 – ADJUST FOR SEGMENTS WHICH STILL SHOW SIGNS OF OVER OR UNDERESTIMATION AND PROJECT FINDINGS

The penultimate step involves projecting findings to unsampled exposure. For segments which appear to still show evidence of over or underestimation (a qualitative judgement) and the sample is less than 10% of total Stratum exposure, findings are projected based on the Common Risk Strata average rather than the Stratum average. This avoids the potential for large sampling errors. For the avoidance of doubt, misstatement is calculated on an absolute rather than relative basis, i.e. if the increase in provisions for the sample is 10MM on an exposure of 100MM, then the projection of findings is 10% of the unsampled exposure. This is illustrated in the Figure below:

Figure 29 Projection of findings to unsampled portfolio

Riskiness bucket	Exposure size bucket	Sample size	Sampling rate	Stratum Average	Common Risk Strata Average	Provision mistatement for projection of findings	Exposure in sample (€MM)	Exposure unsampled (€MM)	Mistatement on sample	Projection of mistatement to unsampled portfolio
Default >12M	5th Percentile	0	0%	0.00%	N/A	0.00%	-	2	N/A	-
Default >12M	Bucket 1	13	0.5%	3.62%	2.84%	3.62%	1.3	265	0	10
Default >12M	Bucket 2	13	21%	2.22%	2.84%	2.22%	14	54	0	1
Default >12M	Bucket 3	13	65%	4.11%	2.84%	4.11%	26	14	1	1
Default >12M	Bucket 4	11	100%	1.36%	2.84%	1.36%	75	-	1	-
Default >12M	Bucket 5	4	100%	2.25%	2.84%	2.25%	60	-	1	-
Default >12M	TOP10	10	100%	2.99%	N/A	2.99%	400	-	12	-
Default <12M	5th Percentile	0	0%	0.00%	N/A	0.00%	-	3	N/A	-
Default <12M	Bucket 1	13	0.3%	4.99%	4.02%	4.02%	1.7	662	0	27
Default <12M	Bucket 2	13	12%	3.65%	4.02%	3.65%	13	97	0	4
Default <12M	Bucket 3	13	37%	2.34%	4.02%	2.34%	27	47	1	1
Default <12M	Bucket 4	9	100%	4.70%	4.02%	4.70%	70	-	3	-
Default <12M	Bucket 5	6	100%	5.35%	4.02%	5.35%	56	-	3	-
Default <12M	TOP10	10	100%	4.88%	N/A	4.88%	389	-	19	-
Sub-total									42	43

The same procedure is followed for NPE projection. Again, any strata for which the sample is less than 10% of the stratum exposure should be projected based on the Common Risk Strata average rather than the Stratum average.

At this stage expert judgement should be applied to ensure the indicated misstatement for the "normal" risk, exposure bucket 1 stratum is appropriate. This is because the size of exposure in this stratum may be large and it is important that sampling error in the single stratum does not lead to overestimation. Any expert judgement applied should be communicated to the CPMO and discussed fully before results are finalised.

6.6.9 STEP 9 – REJECT ANY PROJECTION OF FINDINGS WHERE TOTAL ADJUSTMENT TO PROVISIONS (BOTH SAMPLING AND PROJECTION) IS LESS THAN 5% OF POST PROJECTION FINDINGS

To avoid false accuracy in projection of findings, we only project findings where the result, post projection is outside the acceptable tolerance used for sampling. Therefore, if our estimate of the misstatement of provisions following completion of projection of findings is less than 5% of the total, post projection provisions, we set the projection of findings to zero. Similarly, if our estimate of the misstatement of NPE rate following completion of projection of findings is less than 5% of the total NPE rate post projection, we set the projection of findings to zero. For the avoidance of doubt, any material findings for the sample should still be defined as an adjustment to provisions and included in accounts and in the AQR-adjusted CET1% as discussed in later chapters.

6.7 OUTPUTS

The objective of the projection of findings workblock is to apply the findings from the credit file review to the wider portfolio to arrive at estimates of adjustments for the wider portfolio. The projection of findings is only carried out for the purposes of determining the AQR-adjusted CET1% for use in the stress test. Banks are not expected to explicitly incorporate projection of findings in accounts following the exercise. Any capital requirements that arise as a result of projection of findings would be expected to be reflected in Pillar 2 capital requirements following the CA.

There are no specific outputs to be produced for this workblock.

7 COLLECTIVE PROVISION ANALYSIS

This chapter explains the approach to qualitatively and quantitatively assessing the level of provisioning for parts of a bank's portfolio that would typically be impaired on a collective basis under IAS 39.

For the purposes of the AQR, the analysis of collective provisions applies to all performing exposure (in order to calculate IBNR) and to all non-performing retail exposure (as per AQR asset segmentation), irrespective of whether the bank uses an individual or collective assessment approach for parts of these portfolios.

The approach involves a review of the methodology of the significant bank's collective provision model for adherence to accounting principles. Then, the calibration of the model is quantitatively sense-checked by the creation of a simple, statistical model to estimate provisioning levels based on point-in-time data (termed the "challenger model"). Differences between the significant bank's reported provisioning levels and the challenger model provision estimate shall then be understood, and the light this sheds on the significant bank's model's adherence to accounting standards considered .

The challenger model should be applied uniformly to all banks (although it includes quantitatively-justified expert adjustment to take account of specific circumstances), though interpretation of the findings should respect local accounting rules (nGAAP). This approach is consistent with that used by some regulators, e.g. Central Bank of Ireland. The challenger model approach has been discussed with ESMA.

It should be noted that there is no intention to force significant banks to adopt the challenger model in their accounts. The challenger model is a prudential measure to enable a quantitative challenge of the bank's model and its calibration. It will only have a subsequent impact on the AQR-adjusted CET1% if the significant bank's model cannot be fully justified in line with regulatory requirements.

7.1 SUMMARY OF THE APPROACH

- As a first step, the methodology of the bank's collective provision model is reviewed for adherence to minimum accounting requirements (see Section 7.4). In particular it will be reviewed with respect to
  - Reflection of current conditions
  - Appropriateness of loss emergence period considered
  - Reflection of the current characteristics of the portfolio (e.g. via segmentation)

- Then, a simple 'challenger' model shall be developed by NCA bank teams. This shall be used to provide a quantitative sense-check to the bank's collective provisioning model calibration. This is essential as it allows any issues with the bank's provisioning to be both identified *and* quantified.
- The generalised form of the challenger model for retail exposures will be as follows:
  - Collective provision = PI x EAD x (1-CR) x LGL where:
  - PI (Probability of Impairment) = Point in time probability of exposure being impaired within an emergence period. For non-performing exposures PI = 1 (the EBA simplified approach for NPE means there is no issue with this assumption).
  - EAD = Expected credit exposure at the point of impairment
  - CR (Cure Rate) = Long term likelihood of impaired loan returning to the un-impaired book following the event of impairment
  - LGL (Loss Given Loss) = the level of loss (after discounted recoveries) that can be expected if the facility does not cure.
- The generalised form of the challenger model for corporate exposures will be as follows:
  - Collective provision = PI x EAD x LGI, where:
  - LGI (Loss Given Impairment) = The level of impairment that can be expected at the point of impairment.
- The model will be applied at a debtor level for non-retail and a facility level for retail. The parameters are exposure weighted.
- The rebuttable presumption will be that a *12-month emergence period* will be used for performing exposures. **However**, if the bank can provide objective evidence (see Sections 7.4 and 7.5) that a shorter emergence period is appropriate then this should be applied.
- The model will be parameterised based on observed data for 2013[57]. The approach to parameterisation has been chosen to limit the data requirements for the exercise as much as possible (requiring 2 portfolio snapshots rather than >12 in some alternative approaches). The high-level approach to parameterisation of each element of the calculation will be as follows:
  - PI: % of performing exposure that moves to non-performing within the 12 month period between Dec. 2012 and Dec. 2013. Findings adjusted for 'hidden' NPEs identified in credit file review;

[57] A longer data history may be used to parameterise elements of the model related to foreclosure/write-off to expand the size of the data set

- EAD: outstanding balance plus a Credit Conversion Factor (CCF) x committed lines. The CCF will be set in line with the CRR IV (ccf for standardised portfolios: only 0pct, 20pct, 50 pct, 100 pct. No restriction in values for irb portfolio);
- CR: Based on the one year transition matrix of past due state between Dec. 2012 and Dec. 2013, determine the long term transition matrix and hence cure rate by past due state. Findings adjusted for 'false' transitions identified in credit file review;
- LGL: For retail mortgages, apply a structural model based on recoverable value of collateral; for other retail and SME determine average observed long term recoveries where data exists, where it does not use fall-back parameters defined by the ECB;
- LGI – Calculate average coverage ratio for loans impaired in the last 12 months.

- The challenger model will wherever possible be adjusted for one off events (e.g. portfolio clean up)
- The findings should be reinforced by considering the findings of IRB validation reports (where these exist) and any publicly available analysis (e.g. around performance of securitisation pools) - particularly in relation to parameters such as LGL.
- The 'challenger' model will be applied to the bank's current portfolio and the outputs compared to the bank's current provisioning levels to sense-check the bank's model calibration, as per the figure below:

Figure 30 Illustrative output of challenger model analysis

Product segment	Product type	Risk class	Region	Current indexed LTV	PD	CR	LGL (provisions)	On balance sheet exposure	Off balance sheet exposure	Provision estimate	Provision estimate %	Bank provisions	Difference in provision estimate
Retail mortgages	PDH	Normal	North	5%	0.50%	70%	0%	85.15462	0.865577	0.00	0.00%	0.00	0.00
				15.00%			0%	85.10059	0.631388	0.00	0.00%	0.00	0.00
				25.00%			0%	88.40487	0.664033	0.00	0.00%	0.00	0.00
				35.00%			1%	2.165161	0.752288	0.00	0.00%	0.00	0.00
				45.00%			2%	58.5843	0.481892	0.00	0.00%	0.00	0.00
				55.00%			5%	4.603256	0.016822	0.00	0.01%	0.00	0.00
				65.00%	1%		10%	37.62735	0.240843	0.01	0.03%	0.01	0.01
				75.00%			16%	85.56064	0.426041	0.04	0.05%	0.02	0.02
				85.00%			24%	28.65591	0.928312	0.04	0.14%	0.02	0.02
				95.00%	2%		31%	60.78789	0.337678	0.11	0.18%	0.06	0.06
				105.00%			37%	84.47394	0.666245	0.19	0.22%	0.09	0.09
		Default >12 months	South	5%	100%	30%	0%	24.28258	0.293798	0.00	0.01%	0.00	0.00
				15.00%			0%	36.84592	0.032566	0.02	0.06%	0.02	0.00
				25.00%			0%	43.37545	0.241497	0.11	0.25%	0.10	0.01
				35.00%			1%	56.42058	0.219245	0.48	0.84%	0.45	0.03
				45.00%			3%	26.82155	0.092	0.63	2.32%	0.59	0.04
				55.00%			7%	76.45247	0.389659	3.96	5.16%	3.74	0.22
				65.00%	100%		13%	75.02113	0.996147	7.14	9.40%	6.70	0.44
				75.00%			21%	84.71404	0.76844	12.44	14.55%	11.60	0.84
				85.00%			28%	47.65287	0.689329	9.55	19.76%	8.60	0.95
				95.00%	100%		35%	50.18425	0.815065	12.50	24.50%	12.02	0.47
				105.00%			41%	33.40073	0.552318	9.70	28.57%	9.07	0.63

- Once the comparison between the NCA bank team's model and the bank's calibration are complete, the NCA bank team needs to make an assessment as to whether the bank should be required to increase provisions. Any deviation between the bank's provision level and the challenger model that is less than 5% **at the portfolio level** will be judged as immaterial and need not be investigated further. If the deviation is between 5 and 10% then it may be considered immaterial if there are good reasons relating to data or methodology to explain the difference without the need for further investigation
  - If the challenger model indicates a significant difference of more than 5-10% then this should be investigated via comparison with the details of the bank's model and data. If the difference is attributed to a different period of calibration (as opposed to an error in the calculation of the bank's models) then this may be considered as mitigation if there are plausible well evidenced reasons to believe that 2013 is not representative of a point in time calibration and hence all or part of the deviation can be explained by use of a wider calibration window. However the bank would need to have available the historical information to justify this.
  - The challenger model will be calibrated on the bank's own data. If the bank has no data, fall back parameters may be used. The manual contains basic fall back parameters, though NCAs may propose alternative parameters based on objective analysis for their country.
- The output tables may also be used as an input in the stress test as a means of checking that the point in time PD and LGD parameters used by the bank in its stress test for the relevant portfolios are appropriate.
- Where outputs of the challenger model are used to determine provisions for a bank this should be considered a prudential (i.e. Pillar 2) measure.

The challenger model will be applied directly to all banks irrespective of whether the NCA applies a prescriptive provisioning approach; this will ensure a level playing field across all banks/countries. The calculations may be performed by an NCA or third party. If the NCA has an existing challenger model that uses a similar framework then the specific model and its findings may be discussed with CPMO and, if satisfactory can be used in place of the proposed challenger model.

7.2 INDICATIVE TIMELINE

Table 52 Indicative timeline for collective provision analysis

Task	Indicative date[58]
Propose existing NCA challenger model as alternative and confirm approach is satisfactory	14 March 2014
Complete review of bank's collective provisioning model	11 April 2014
Loan tape data post DIV available	11 April 2014
Additional information (sales log, write-off list, unsecured recoveries data etc.) identified	11 April 2014
First cut models developed without adjustment for credit file review	9 May 2014
Model parameters adjusted based on findings from credit file review	4 July 2014
Final results produced for AQR	**8 July 2014**
PI, CRx, LGLx and LGI parameters delivered for use in the stress test	1 August 2014

7.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 53 Illustrative models for the collective provision analysis

Subject	Illustrative model/parameter sheet
Probability of impairment (PI)	Step-by-step example calculation of PI with parameters and definitions
Cure rate (CR)	Step-by-step example calculation of CR with parameters and definitions
Loss given loss – retail mortgage	Step-by-step example calculation of LGL for retail mortgages with parameters and definitions
Loss given loss – credit cards	Step-by-step example calculation of LGL for credit cards with parameters and definitions
Loss given impairment - corporate	Step-by-step example calculation of LGI for corporates with parameters and definitions
Collateral and other macro indices	Parameter sheet for collateral indices and other macro indices

[58] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones

Table 54 Templates for the collective provision analysis		
Template	**Summary of contents**	**Frequency of submission to CPMO**
T7 Collective provision results template	• Template to compare results of challenger model with bank's calibration • Results from template are used in the AQR-adjusted CET1% ratio template	Two versions to be submitted: 1. Results based on analysis of loan tape with no adjustment for credit file review; 2. Results with adjustment for credit file review

7.4 METHODOLOGY REVIEW

The NCA bank team shall review the bank's collective provision model for compliance with the relevant regulations. The key paragraphs of the European implementation of IAS 39 are described below, along with a number of relevant ESMA enforcement decisions. Following each a summary of the takeaways are provided. It is against these statements of the key regulatory requirements that the NCA bank team shall review the bank's collective provision model for compliance. The CPMO will provide a collective provisioning model review checklist before March 14th.

IAS 39, Para 64 (EU)	*An entity first assesses whether objective evidence of impairment exists individually for financial assets that are individually significant, and individually or collectively for financial assets that are not individually significant (see paragraph 59). If an entity determines that no objective evidence of impairment exists for an individually assessed financial asset, whether significant or not, it includes the asset in a group of financial assets with similar credit risk characteristics and collectively assesses them for impairment. Assets that are individually assessed for impairment and for which an impairment loss is or continues to be recognised are not included in a collective assessment of impairment.*

- A collective assessment should be performed for individually insignificant exposures and unimpaired individually significant exposures[59].

[59] Note that, for the purposes of the AQR, individually significant is defined as all non-retail AQR asset segments.

IAS 39, Para AG84 (EU)

Impairment of a financial asset carried at amortised cost is measured using the financial instrument's original effective interest rate because discounting at the current market rate of interest would, in effect, impose fair value measurement on financial assets that are otherwise measured at amortised cost. If the terms of a loan, receivable or held-to-maturity investment are renegotiated or otherwise modified because of financial difficulties of the borrower or issuer, impairment is measured using the original effective interest rate before the modification of terms. Cash flows relating to short-term receivables are not discounted if the effect of discounting is immaterial. If a loan, receivable or held-to-maturity investment has a variable interest rate, the discount rate for measuring any impairment loss under paragraph 63 is the current effective interest rate(s) determined under the contract. As a practical expedient, a creditor may measure impairment of a financial asset carried at amortised cost on the basis of an instrument's fair value using an observable market price. The calculation of the present value of the estimated future cash flows of a collateralised financial asset reflects the cash flows that may result from foreclosure less costs for obtaining and selling the collateral, whether or not foreclosure is probable.

- The effective interest rate should be used to discount recoveries (not the cost of capital) for provisioning purposes; and
- Collateralised exposures should assume foreclosure will occur irrespective of whether or not this is probable.

IAS 39, Para AG87 (EU)

For the purpose of a collective evaluation of impairment, financial assets are grouped on the basis of similar credit risk characteristics that are indicative of the debtors' ability to pay all amounts due according to the contractual terms (for example, on the basis of a credit risk evaluation or grading process that considers asset type, industry, geographical location, collateral type, past-due status and other relevant factors). The characteristics chosen are relevant to the estimation of future cash flows for groups of such assets by being indicative of the debtors' ability to pay all amounts due according to the contractual terms of the assets being evaluated. However, loss probabilities and other loss statistics differ at a group level between (a) assets that have been individually evaluated for impairment and found not to be impaired and (b) assets that have not been individually evaluated for impairment, with the result that a different amount of impairment may be required.

- Parameters for collective provisioning should be differentiated by relevant sub-segments.

IAS 39, Para AG89 (EU)	*Future cash flows in a group of financial assets that are collectively evaluated for impairment are estimated on the basis of historical loss experience for assets with credit risk characteristics similar to those in the group. Entities that have no entity-specific loss experience or insufficient experience, use peer group experience for comparable groups of financial assets. Historical loss experience is adjusted on the basis of current observable data to reflect the effects of current conditions that did not affect the period on which the historical loss experience is based and to remove the effects of conditions in the historical period that do not exist currently. Estimates of changes in future cash flows reflect and are directionally consistent with changes in related observable data from period to period (such as changes in unemployment rates, property prices, commodity prices, payment status or other factors that are indicative of incurred losses in the group and their magnitude). The methodology and assumptions used for estimating future cash flows are reviewed regularly to reduce any differences between loss estimates and actual loss experience.* *[Regulatory TTC PD/LGD parameters are not acceptable without explicit PIT adjustment]*
CESR Decision ref. EECS/1209-17	*There are many differences between a Basel II calculation of expected losses and the calculation of collective impairment according to IFRS which is based on incurred losses (IAS 39, paragraph .63). PD in a Basel calculation is based on a 12 month time horizon whereas IFRS requires impairment losses to be based on the remaining lives of the loans, that is, the total future cash flow, in accordance with IAS 39, paragraph AG 92. EL in a Basel calculation is based on expected losses also taking into account loss events that are expected to occur within the next 12 months whereas IFRS is based solely on incurred loss events. LGD in a Basel calculation is based on a through-the-cycle approach where a downturn has to be taken into account whereas IFRS adopts a point-in-time approach, pursuant to paragraph AG 89.*

- Parameters should be set based on recent historical experience (though no stipulation is made around the length of history for the experience). For the purposes of the AQR 12 months will be used; and

Estimates of cash flows have to reflect current conditions – i.e. parameters should be calibrated based on recent history (e.g. last 12 months) although adjustment for non-recurring events is appropriate.

CESR Decision ref. EECS/1209-17	*Only during LIP will a loss event have an impact on collective impairment. After that period, impairment is identified individually. The condition for using a maximum LIP period of [XX] months is that all losses have been identified at individual level by then, cf. IAS 39. AG 88 which says that collective impairment losses is an interim step pending individual impairment losses.* *The bank [should be able] to produce convincing evidence that all loss events are known [at the end of the LIP]. The enforcer found that it is most likely that LIP varies depending on customer type and type of loss event and concluded that this level of variation should be taken into account.*

- Banks should be able to provide objective evidence (e.g. historic data) to justify the length of the emergence period (loss identification period).

CESR Decision ref. EECS/1209-17	*According to IAS 39, paragraph AG 85, the process for estimating impairment should consider all credit exposures, not simply those of a poor quality. All downward migrations from one credit grade to another should be considered, not only those reflecting a severe deterioration in credit.*

- No exposures shall be excluded from the collective provision analysis due to high credit quality.

CESR Decision ref. EECS/1209-17	*It follows from IAS 39, paragraphs 59, 62-63, AG 87, AG 89, AG 91 and 92, that a model should be in place in order the make collective impairment assessment and that management judgement, however experienced, is not sufficient* *According to IAS 39, paragraph AG87, customers should be grouped on the basis of sharing similar credit risk characteristics that are indicative of their ability to pay all amounts due according to contractual terms. As there was a very large number of customers in different geographical areas it was very unlikely that these customers would all share similar credit risk characteristics.*

- A collective provision model is required. Sole reliance on expert judgement is not acceptable; and
- Segmentation is required in order to treat customers with different characteristics differently.

In addition, the NCA bank teams shall review Model Validation Reports and other relevant information to assess the adequacy of model validation, backtesting and calibration as well as input and output processes.

7.5 CHALLENGER MODEL – PROBABILITY OF IMPAIRMENT (PI)

This section describes below:

- Data required;
- Sub-segmentation to be applied;

- Calculation approach; and
- Example calculation.

PI is calculated over a 12 month time horizon in order to provide an appropriate input for stress testing. Throughout the analysis any NPE is viewed to be impaired and vice versa. As such the NPE flag is used for calculating PI. Given the EBA simplified approach NPE definition this is a reasonable assumption.

When applying the challenger model for the purposes of assessing collective IBNR provisioning calibration, PI may be reduced for performing exposures to reflect a shorter than 12 month emergence period. If the bank has objective evidence that a shorter than 12 month time horizon is appropriate, then PI should be reduced by the ratio between the bank's emergence period (in months) and 12 months for performing exposures, differentiating where appropriate by segment (e.g. a longer emergence period would be expected for watchlist cases than performing cases).

The bank's objective analysis of emergence period should specifically analyse the amount of time between the event of loss and the observation of the loss for a large sample of exposures (e.g. all impaired exposures in the last 12 months). The 'event of loss' should be specific to each case, for instance, the event of loss for a retail client might be the client losing their job; the event of loss for a corporate might be the loss of a large customer; the event of loss for a CRE client might be a fall in property prices or the loss of an anchor tenant. The emergence period in such a case might therefore be the difference in time between the client losing their job; the corporate losing the customer; or the CRE client losing the anchor tenant and impairment being identified. Note, that where non-retail files have been examined by credit file review for specific impairment it is still appropriate to hold IBNR, as the event of loss may have happened but not yet been recorded in the latest available data.

A significant sample of real cases would need to be available in order for analysis to be judged to be objective.

7.5.1 DATA REQUIRED

The following information is required as at Dec 2012 and Dec 2013:

- Debtor ID (R_IDFD);
- Facility ID (for retail) (R_IDFF);
- Total on-balance sheet exposure [$ONBAL_{2012}$] (E_ONBAL/D_ONBAL);
- Total off-balance sheet exposure [$OFFBAL_{2012}$] (E_OFFBAL/D_OFFBAL);
- Current NPE flag [NPE_{2012}, NPE_{2013}] (as per EBA simplified approach described above) (S_NPEAQR)

- Ever NPE in last 12 months flag [$NPE12M_{2013}$] (as per EBA simplified approach described above) (S_NPE12M)
- Product (i.e. type of product e.g. Auto loan) (B_PROD)
- LTV bucket (based on indexed last valuation) for retail mortgages, shipping, aviation and CRE (unknown, 0-60%, 60-80%, 80%+, N/A) (D_LTV/F_LTV)
- Risk classification (as per sampling definition)
- Channel (Broker vs. non-Broker for retail mortgages and retail other only) (B_CHAN)
- Internal rating (where relevant) (R_INTRAT)
- Days past due (D_DPD/D_DAYPD)

From this information 2 new fields will be created by the NCA bank team (described below)

- SEG – segment for each facility
- IFLAG – Impaired flag

The following additional information is required

- W/OLIST – List of all exposures with write-offs or foreclosures in the last 12 months as at Dec 2013

7.5.2 SUB-SEGMENTATION

The calculation of the parameters should be done at a sub-segment level. The dimensions for the sub-segmentation are:

Table 55 Product-based segmentation

AQR asset segment	Product segmentation
RRE	Primary Domestic Home; Buy to Let; Second Home
Other retail	E.g. Credit card; overdraft; unsecured loan; Auto loan and lease; Other *(note – specific segments are not prescriptive but used as an indication)*
Retail SME	e.g. Asset based lending; Trade receivables; other secured; unsecured *(note – specific segments are not prescriptive but used as an indication)*
Corporate (Large and SME) and project finance	None
Shipping, aviation, CRE	None

Table 56 LTV-based segmentation (where LTV calculated based on indexed last valuation)	
AQR asset segment	**LTV segmentation**
RRE	0-60%, 60-80%, 80%-100%,100-120%+ 120%+ unknown/error
Other retail (excl. other secured loans)	None
Other secured loans (retail)	None
Retail SME	None
Corporate (Large and SME) and project finance	None
Shipping, aviation, CRE	0-60%, 60-80%, 80%+, unknown

Table 57 Channel-based segmentation	
AQR asset segment	**Channel segmentation**
RRE	Broker, Other
Other retail	Broker, Other
Retail SME	N/A
Corporate (Large and SME) and project finance	N/A
Shipping, aviation, CRE	N/A

Table 58 Risk-based segmentation	
AQR asset segment	**Risk-based segmentation**
RRE	High risk, High-risk cured, Normal cured, Normal (see sampling methodology)
Other retail (excl. other secured loans)	High risk, High-risk cured, Normal cured, Normal (see sampling methodology)
Other secured loans (retail)	High risk, High-risk cured, Normal cured, Normal (see sampling methodology)
SME	High risk, High-risk cured, Normal cured, Normal (see sampling methodology)
Corporate (Large and SME) and project finance	High risk, High-risk cured, Normal cured, Normal (see sampling methodology) and internal rating
Shipping, aviation, CRE	High risk, High-risk cured, Normal cured, Normal (see sampling methodology)

Additionally, non-retail exposure should be segmented by internal rating.

Sub-segments with immaterial exposure or where the segment cannot be defined need not be separately analysed but can be grouped with the most appropriate other sub-segment.

The segmentation field (SEG) is defined by concatenating the 4 segmentation criteria above i.e. SEG = Product & LTV bucket & Channel & Risk classification

7.5.3 CALCULATION APPROACH

The first task is to create a flag for an impairment event in the last 12 months. An impairment event is considered to have occurred if the debtor/facility meets any of the conditions for NPE at any point in the last 12 months but was not NPE in Dec 2012. An impairment flag is therefore defined as:

- IFLAGi is the array of impaired flags for all facilities in a segment

The calculation is as follows (using Excel notation for clarity):

IFLAGi=IF(ISNA(VLOOKUP(DEBTORIDi,W/OLIST,1,FALSE)), if (and ($NPE_{i,2012}$=0, $NPEL12M_{i,2013}$ = 1),1,0),1)

Where W/OLIST is the array of the list Debtor IDs that have been written off or foreclosed during the last 12 months

PIx is then defined based on the above fields for the array i of all facilities in the segment x

$PI_{x,}$ = sum [$IFLAG_i$ x ($ONBAL_{i,2012}$ + CCF_ix$OFFBAL_{i,2012}$)]/[(1- $NPE_{i,2012}$) x ($ONBAL_{i,2012}$ +CCF_ix$OFFBAL_{i,2012}$)]

Once the calculation has been performed across all segments, the output should be observed and sense checked. Where observed relationships between segments are judged to be unintuitive, adjacent segments should be merged until a logical relationship is defined. For instance if counterparties internally rated grade A have a higher PI than those rated grade A-, then the grade A and A- segments should be merged as the finding is likely to be driven by lack of granularity in data.

The table below illustrates how this should be done:

Table 59 Segments and PI		
SEG	PI (observed)	PI (merged)
NormalA	1.21%	0.42%
NormalA-	0.00%	0.42%
NormalBBB+	0.06%	0.42%
NormalBBB	1.50%	1.50%
NormalBBB-	1.99%	1.99%
NormalBB	4.48%	4.48%
NormalB	10.44%	10.44%
Normal cureAll	25.33%	25.33%
High riskAll	18.62%	18.62%
High risk CureAll	26.01%	26.01%

Note, that in the above example NormalA, NormalA- and Normal BBB+ are merged because their relative PIs are clearly unintuitive (BBB+ is expected to be higher risk than A, for example). Normal cureAll and High riskAll are not merged as there is no a priori expectation that "high risk" must have a higher PI than "normal cure", as recent cures are also considered a higher risk segment.

7.5.4 EXAMPLE CALCULATION

An example calculation and output is shown in the attached Excel file *"PI illustration.xls"*

7.6 CHALLENGER MODEL – CURE RATE (CR)

The following aspects are described below:

- Sub-segmentation to be applied
- Data required
- Calculation approach
- Example calculation

It is important to note that CR is only determined for retail exposures. For corporate exposures LGI is used in place of (1 - CR) x LGL

7.6.1 SUB-SEGMENTATION

The calculation of the parameters should be done at a sub-segmentation level. The dimensions for the sub-segmentation are slightly simpler than for PI (given more limited data volumes and hence reduced ability to differentiate parameters in most situations):

Table 60 Product-based segmentation

AQR asset segment	Product segmentation
RRE	Primary Domestic Home; Buy to Let; Second Home
Other retail	*As an example:* Credit card; overdraft; unsecured loan; Auto loan and lease; Other
SME	*As an example:* Asset based lending; Trade receivables; other secured; unsecured

Product segments do not need to be adhered to strictly and can follow individual bank data structures

Sub-segments with immaterial exposure or where the segment cannot be defined need not be separately analysed but can be grouped with the most appropriate other sub-segment.

7.6.2 DATA REQUIRED

The following information is required as at Dec 2012 and Dec 2013:

- Debtor ID (R_IDFD)
- Facility ID (R_IDFF);
- Total on-balance sheet exposure (E_ONBAL);
- Product type (B_PROD);
- NPE flag (as per EBA simplified approach as described above) (S_NPEAQR);
- Days past due[60] (D_DPD);
- Forbearance flag (where available) (FO_INT).

The following additional information is required

- Facility IDs of all exposures with write-offs or foreclosures in the last 12 months as at Dec 2013

[60] Definition of Months past due for term loans is the number of months' worth of instalments missed and for revolving loans is the number of days past due with materiality

7.6.3 CALCULATION APPROACH

A roll rate approach will be taken to determining cure rate. This will involve the following steps

1. Combine NPE, past due, forbearance, write-off and foreclosure information to create a single set of 'Status' flags.
2. Create a one-year roll rate matrix based on 'Status'.
3. Integrate findings from credit file review into roll rate matrix. Where forbearance data is not available assumptions for the matrix will be set solely based on credit file reviews
4. Multiply up the roll rate matrix to 4 years to allow us to determine 4 year migration behaviour
5. Define cure rate as the probability of a loan returning to <1 month past due.
6. Fit a Weibull[61] curve to the observed long term cure rate.
7. Apply Weibull function to whole portfolio depending on months past due (facilities < 3months past due apply cure rate for 3 months past due).

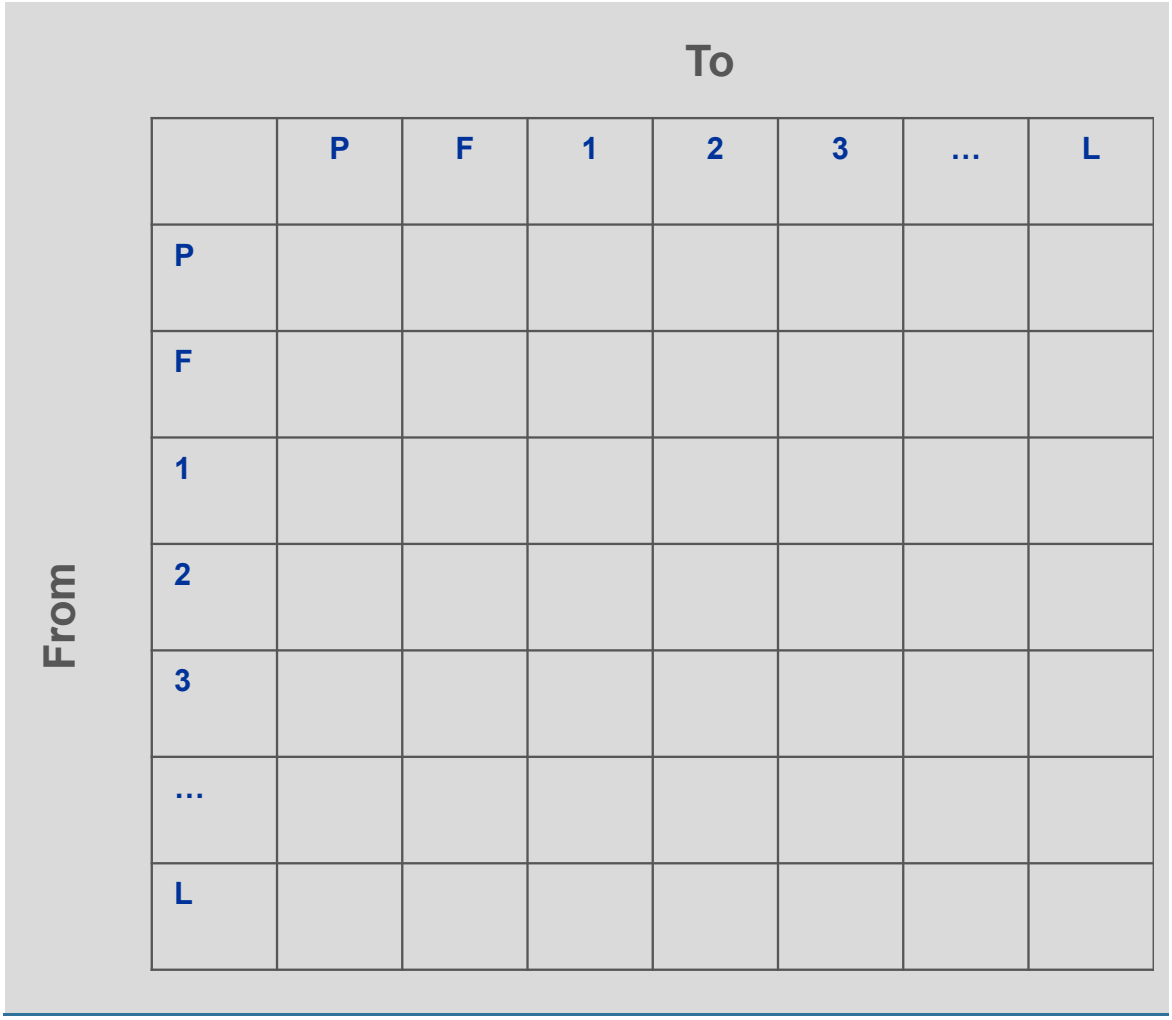
Each step is described in more detail below:

7.6.3.1 Combine NPE, past due, forbearance and foreclosure information to create a single set of NPE states

First, NCA bank teams shall create a roll rate matrix of the form below:

[61] Exponential chosen as, in our experience, this provides best fit to observed data.

Figure 31 Roll rate matrix for CR



Where

P = Performing with less than one month past due

F = Forborne performing (where forborne is ideally defined in line with EBA definitions or using internal definition if EBA definition is not available)

1 = One month past due, not NPE (according to EBA simplified approach)

2 = Two months past due, not NPE (according to EBA simplified approach)

3= NPE (according to EBA simplified approach) with past due less than 4 months

4 = Four to five months past due etc

L = Write-off, liquidation or foreclosure

The NCA bank team therefore needs to create the 'Status' variable at two points in time (Dec 2012 and Dec 2013) based on the data described above. The first step is to translate the days past due array into a 'months past due' array as follows:

$MPD_{i,20XX}$ = Rounddown($DPD_{i,20XX}$/30,0)

The NCA bank team can then create the state array as follows:

IF($W/OLIST_{i,20XX}$ = 1, $Status_{i,20XX}$ = "L",

IF(AND($FORBFLAG_{i,20XX}$=1,$NPE_{i,20XX}$=0), $Status_{i,20XX}$ = "F",

IF(AND($MPD_{i,20XX}$<3,NPE=1), $Status_{i,20XX}$ = "NPE",

Min (ROUNDDOWN($MPD_{i,20XX,}$0),24),"P")))

It is important to note that $MPD_{x,20XX}$ is capped at an appropriate level (e.g. 24 months) to limit the potential for outliers affecting the result. The appropriate level will differ by country and by product and should be set at the NCA bank teams' discretion, with the following expectations:

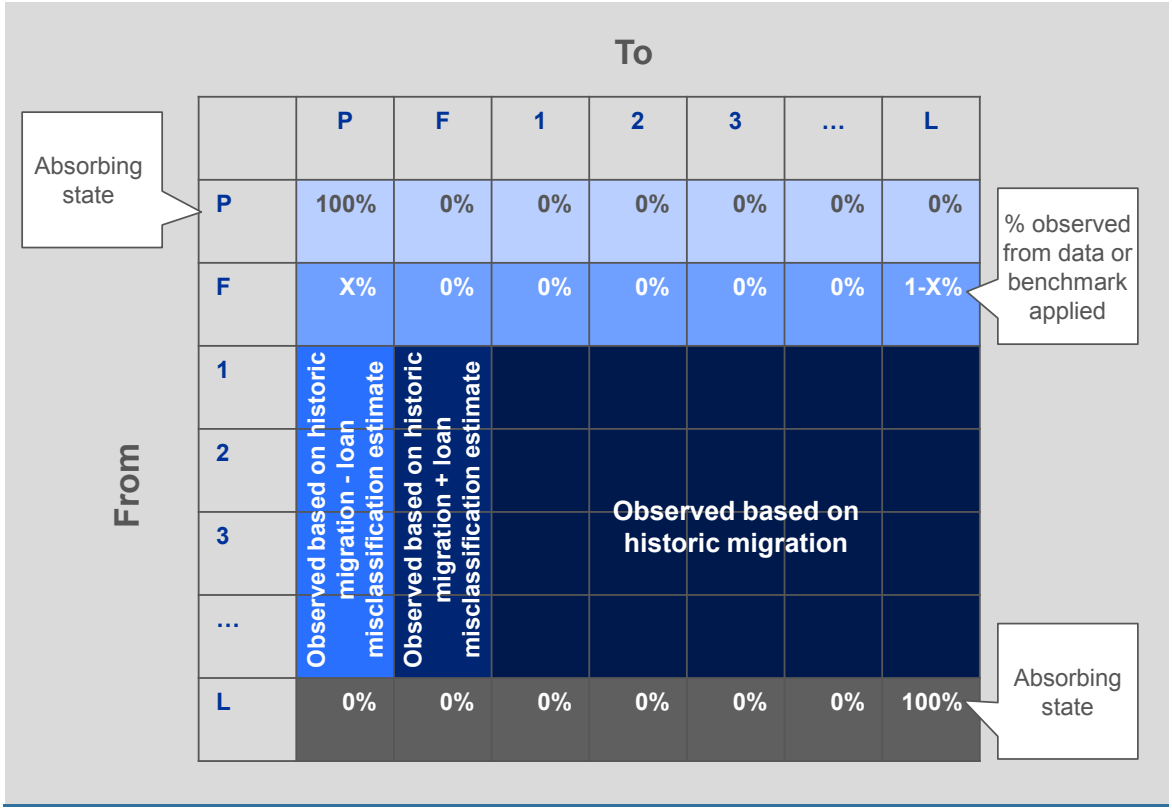
- RRE > 24 months
- Other retail < 25 months
- SME and corporate < 25months

If forbearance, as defined in EBA ITS guidelines, is not available the closest related flag should be used (e.g. restructuring). If no equivalent is used, the forbearance line of the matrix will be populated using benchmarks (as described in the following section).

7.6.3.2 Create one-year matrix

Once the status of each loan has been defined at each point in time, a one-year migration matrix between the status at December 2012 and December 2013 is defined as per the figure below

Figure 32 One-year migration matrix for CR



Migration rates are measured on a beginning of period exposure weighted basis. That is, the probability of migrating from 1 month past due to 3 months past due is): The exposure that moves from 1 months past due to 3 months past due divided by the amount of exposure that was 1 month past due.

Sum of exposure migrating from 1 month past due to 3 months past due by Dec 2013/Sum of exposure at Dec 2012 that is 1 month past due and not NPE.

Exposure includes both on and off-balance sheet, with off-balance sheet multiplied by a CCF to arrive at exposure (using CCFs from CRR/CRD IV).

It will be assumed, for the purposes of the cure rate analysis, that the performing state 'P' is an absorbing state. That is, once loans have been cured, then they are assumed for the purposes of provisioning to have no loss associated with them.

If a loan is classed as being forborne, then over a 12 month time horizon it is assumed only two outcomes are possible – either the forbearance treatment will have been successful and the loan will have returned to the performing book, or the forbearance measure will have failed and it is assumed the loan is not restructured further. The likelihood of a forborne loan returning to the

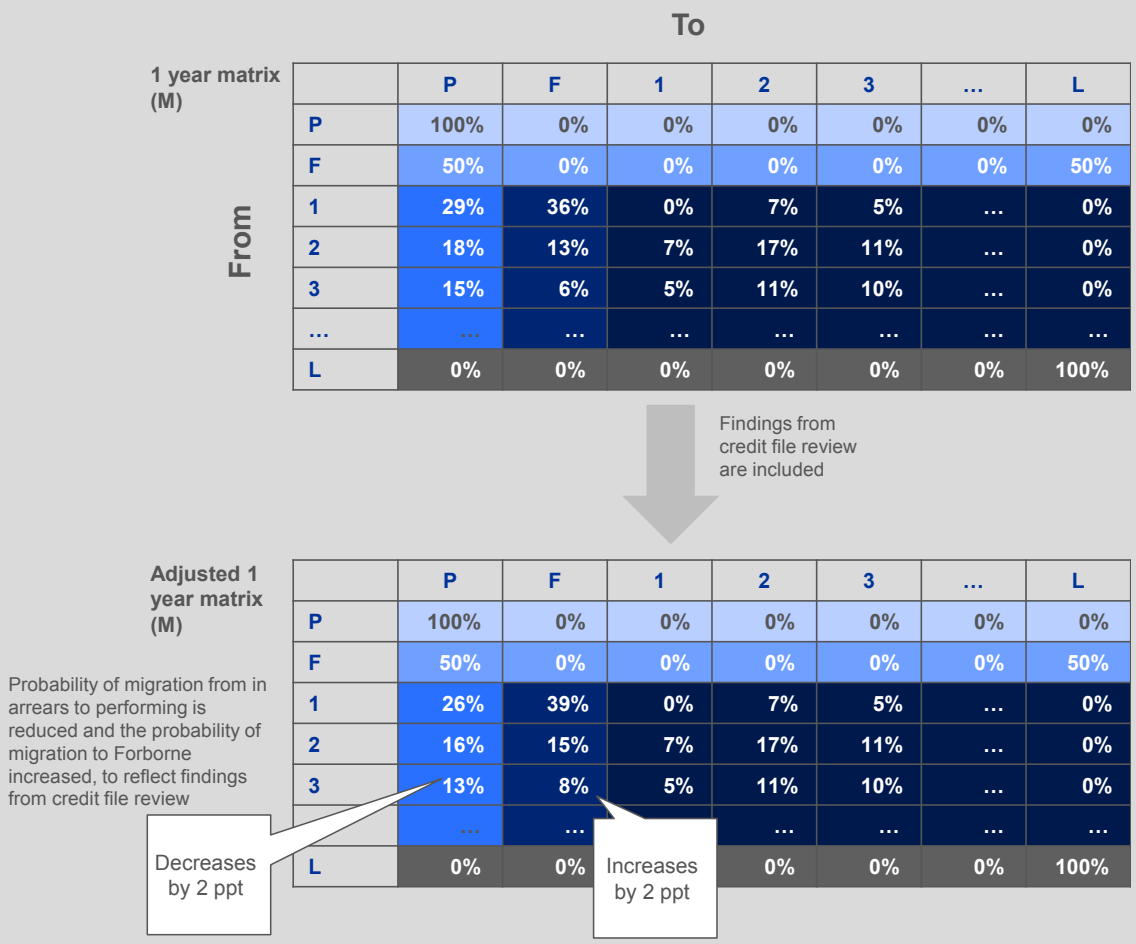
performing book can be set using the following hierarchy of approaches (where the first approach possible given reliable data availability should be chosen):

1. Observed directly from loan tape data
2. Observed using additional analysis of supplementary data provided by the bank
3. A benchmark of 60% can be assumed

7.6.3.3 Adjust matrix based on credit file review (applies to retail mortgages only, not retail SME or retail other)

The migration rate from NPE to performing needs to be adjusted in the matrix for misclassifications. This should be done based on the credit file review and can be applied in a simplistic way by proportionally reducing the amount of exposure that migrates from NPE to performing and moving it into the Forborne state based on the appropriate observed finding from the credit file review.

Figure 33 Adjusted one-year migration matrix for CR



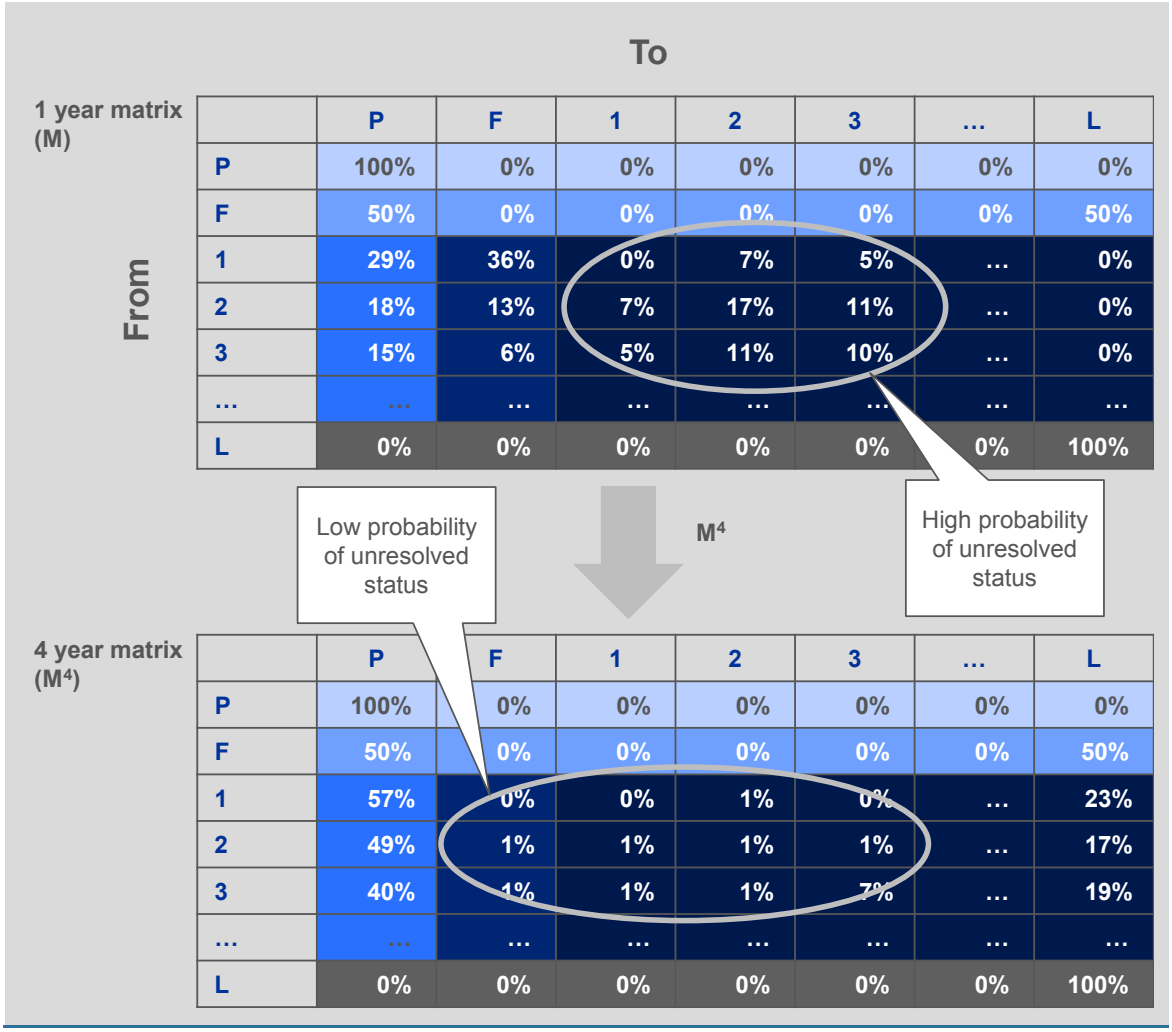
	P	F	1	2	3	…	L
P	100%	0%	0%	0%	0%	0%	0%
F	50%	0%	0%	0%	0%	0%	50%
1	29%	36%	0%	7%	5%	…	0%
2	18%	13%	7%	17%	11%	…	0%
3	15%	6%	5%	11%	10%	…	0%
…	…	…	…	…	…	…	…
L	0%	0%	0%	0%	0%	0%	100%

	P	F	1	2	3	…	L
P	100%	0%	0%	0%	0%	0%	0%
F	50%	0%	0%	0%	0%	0%	50%
1	26%	39%	0%	7%	5%	…	0%
2	16%	15%	7%	17%	11%	…	0%
3	13%	8%	5%	11%	10%	…	0%
…	…	…	…	…	…	…	…
L	0%	0%	0%	0%	0%	0%	100%

7.6.3.4 Multiply up to four years

The migration matrix describes the change in state over a 12 month period. In reality, loans can often take much longer for the outcome to be resolved. The NCA bank team therefore needs to multiply the one-year matrix by itself to obtain an estimate of the long term outcome. The matrix is then put to the power of 4, to simulate the migration behaviour over a 4 year period as illustrated in the figure below:

Figure 34 Four-year migration matrix for CR



	P	F	1	2	3	…	L
P	100%	0%	0%	0%	0%	0%	0%
F	50%	0%	0%	0%	0%	0%	50%
1	29%	36%	0%	7%	5%	…	0%
2	18%	13%	7%	17%	11%	…	0%
3	15%	6%	5%	11%	10%	…	0%
…	…	…	…	…	…	…	…
L	0%	0%	0%	0%	0%	0%	100%

	P	F	1	2	3	…	L
P	100%	0%	0%	0%	0%	0%	0%
F	50%	0%	0%	0%	0%	0%	50%
1	57%	0%	0%	1%	0%	…	23%
2	49%	1%	1%	1%	1%	…	17%
3	40%	1%	1%	1%	7%	…	19%
…	…	…	…	…	…	…	…
L	0%	0%	0%	0%	0%	0%	100%

This approach assumes the loan behaviour between past due states is Markovian. This assumption is critical to limit the size of the data set necessary to produce this analysis. Without this assumption quarterly snapshots of the portfolio for at least the last 3 years would be required which would put a significant burden on banks.

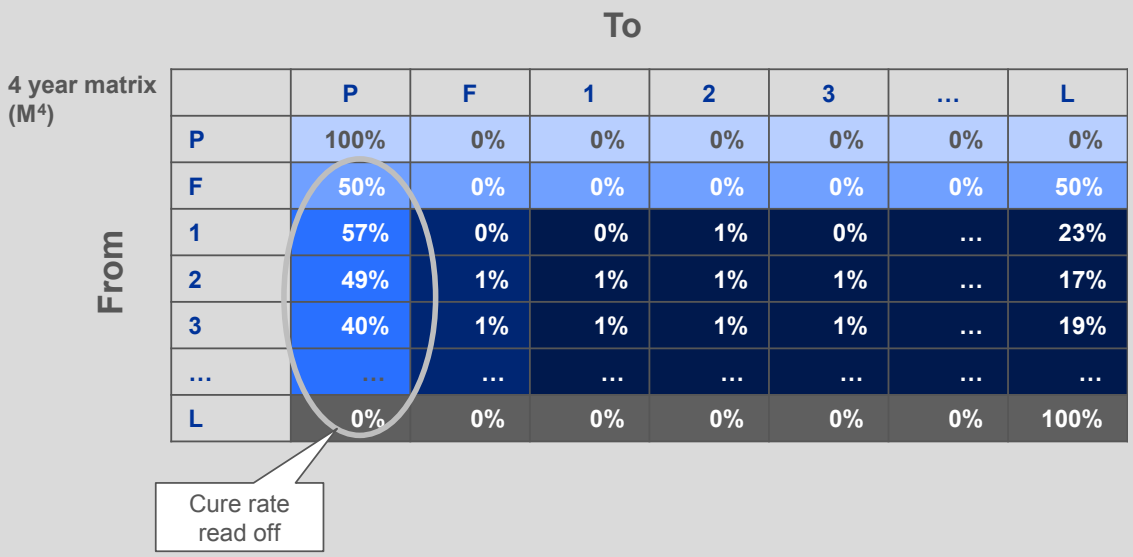
The approach has been tested against other approaches that require more data but relax the assumption about Markovian behaviour and find similar results. The assumption of Markovian behaviour is therefore expected to be reasonable in the context.

7.6.3.5 Define cure rate

It shall be assumed that cure does not occur until the exposure is less than 1 month past due. As a result, a non-performing exposure must return to the 'P' state before it is considered performing. Therefore the cure rate for an exposure in any state is the probability of migrating to P.

The cure rate can therefore be read off as the probability of migrating to P as illustrated in the figure below.

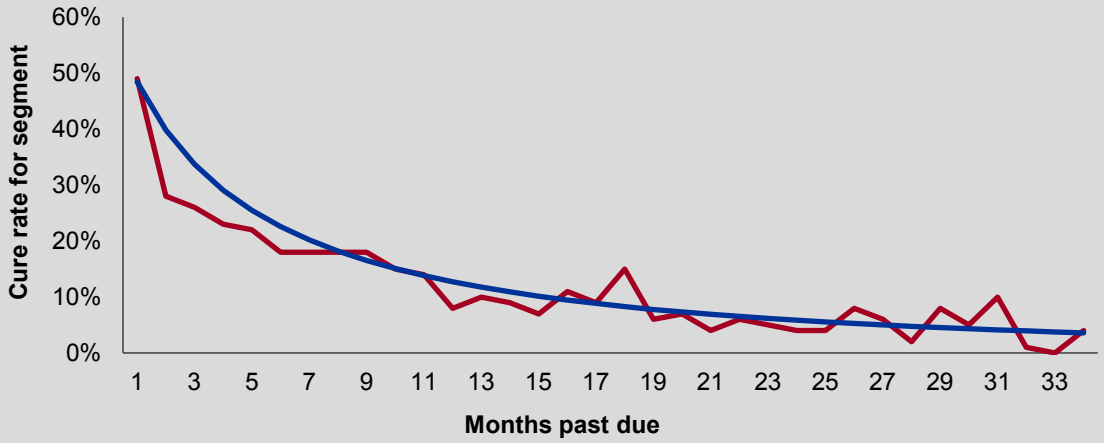
Figure 35 Cure rates within the four-year migration matrix for CR



7.6.3.6 Fit relationship between time past due and cure rate

Given that the observed migration behaviour is somewhat noisy (given the number of observations) it is necessary to fit a relationship between the time past due and cure rate that is monotonic and reflective of the concave nature of the relationship. A Weibull function is applied (consistent with hazard rate analysis) as illustrated in the figure below. A least-squares approach may be adopted to achieve the best fit.

Figure 36 Weibull function applied on observed migration behaviour



This allows a quantitative relationship between months past due and cure rate to be defined that can be applied across the portfolio for all loans with past due greater than or equal to 3 months. A "3 months past due" cure rate is applied for performing loans (in combination with a PI of less than 1).

It is a critical at this stage to sense check results. One would expect a concave, downward sloping relationship between months past due and cure rate. This may not occur due to data noise/sample size. If this is the case, data quality should be checked and further bucketing of past due buckets considered to improve stability (e.g. it may not make sense to include past due buckets beyond e.g. 24 months past due in some segments).

7.6.4 EXAMPLE CALCULATION

An example calculation and output is shown in the attached Excel file *"CR illustration.xls"*.

7.7 CHALLENGER MODEL – LOSS GIVEN LOSS (LGL)

The approach to determining LGL differs for retail mortgages versus other segments. For retail mortgages a structural approach is applied based on collateral value (including the impact of third party provided mortgage indemnity guarantees (MIG)). For other segments a simpler approach is applied based on observed recoveries.

This section describes below for retail mortgages and other retail segments separately:

- Data required;
- Sub-segmentation to be applied;
- Calculation approach; and

- Example calculation.

7.7.1 RETAIL MORTGAGES LGL

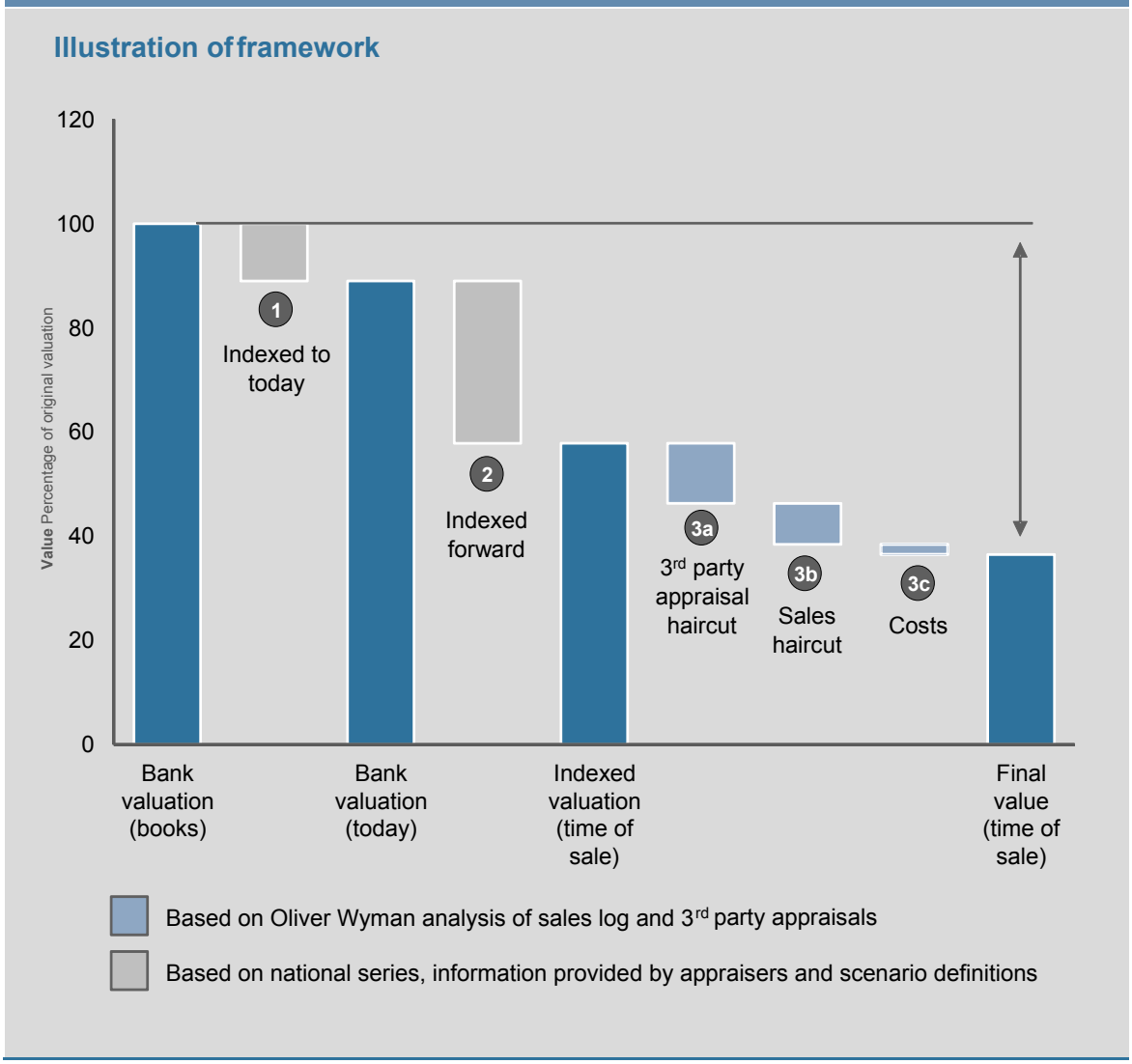
7.7.1.1 High-level framework

The LGL framework for retail mortgages essentially involves deducting from the outstanding balance at default, the discounted value of the property collateral, taking into account:

- Overestimation of appraisal values (assessed based on findings from independent, external party review);
- Sales discounts on appraisal values following foreclosure;
- Volatility in recoveries;
- Direct costs (i.e. auction fees, appraisal fees etc.);
- Accrued interest/Discounting of recoveries;
- Over optimistic appraisals.

This is illustrated in the figure below:

Figure 37 Illustration of retail mortgages LGL framework



7.7.1.2 Data required

Three types of information are required for the analysis – 1) loan tape data 2) Data on historical recoveries and 3) Findings from reappraisal of properties

1. Loan tape information

The following loan tape information is required to determine the indexed LTV for each facility in the current portfolio

- Total on-balance sheet exposure (E_ONBAL); [$ONBAL_{2013}$] ;
- Total off-balance sheet exposure (E_OFFBAL); [$OFFBAL_{2013}$] ;
- CCF (E_CCF);
- Valuation at last appraisal (C_VAL);
- Date of last appraisal (C_DATE); and

- Region (C_REGION).

2. Findings from independent, external party appraisal

It is necessary to understand the difference between independent, external party property price appraisals and indexed bank appraisals differentiated, where appropriate, by time of appraisal. This information comes directly from the credit file review.

3. Data on historical recoveries

Additional information is required on all foreclosure cases in the last 36 months

- Sales proceeds
- Last appraisal value,
- Date of appraisal
- Date of sale
- Costs incurred in sale

50 foreclosure cases for each sub-segment are considered sufficient for the purposes of this analysis. It is not acceptable to disregard foreclosure cases on the basis they are exceptional – foreclosure cases are exceptional by definition.

7.7.1.3 Sub-segmentation to be applied

The LGL analysis will be differentiating by LTV on a continuous basis.

The parameters: sales ratio; costs; effective interest rate; do not need to be segmented to reduce complexity and deal with sparse data if required.

7.7.1.4 Calculation approach

The indexed LTV for an array i to the point of default (LTVIi) is defined as follows:

$LTVI_i$ = ($LTVA_i$*(1+Costs) *(1+Effective interest rate)^time to sale)/((Index to $today_x$)*(Index to $sale_x$)*(1+ Appraiser discount))

- $LTVA_i$ = The current on and off-balance sheet exposure/property value at appraisal
- Appraiser discount = average difference between last bank appraisal indexed to date of appraisal and the independent, external party appraisal of the property value for the AQR sample of residential property
- Costs = Average foreclosure expenses as a % of balance (e.g. appraisal fees)
- Time to sale = the observed average time to sale in years

- Index to today = The average property price for the region today/Average property price for the region at the date of appraisal
- Index to sale= 1 – Forward looking change to HPI for the region (to be communicated by the ECB by country)
- The discount rate used should be the effective interest rate

The LGL is then calculated from LTVI using the formula below (applying Excel notation for transparency).

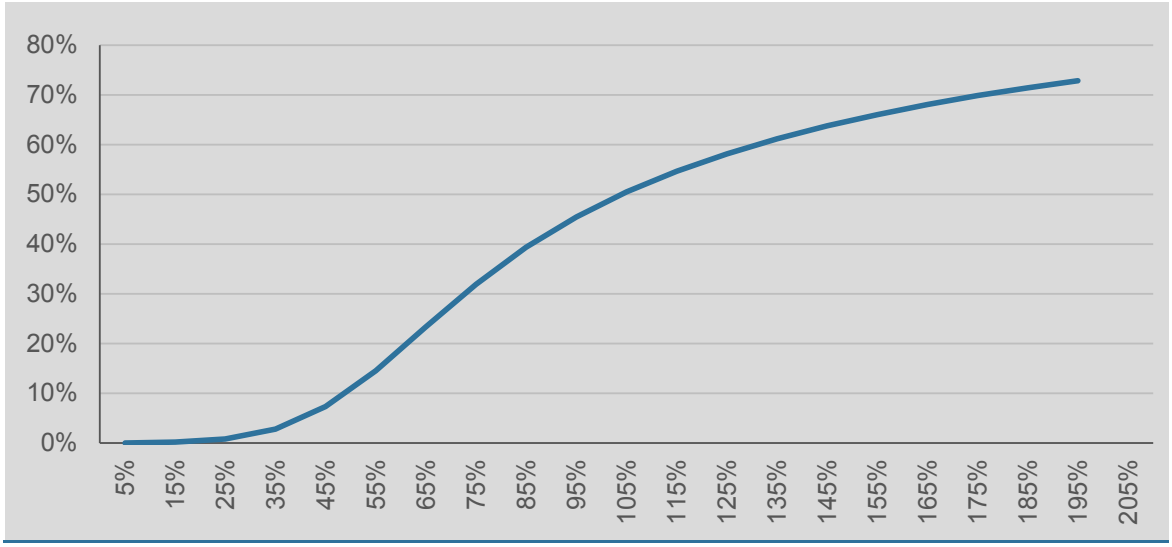
LGL=(LTVIi-((1-NORMDIST(LTVIi,SALES,SALES_VOL,TRUE))*LTVIi-0.5*SALES*ERF((SALES-LTVIi)/(SQRT(2)*SALES_VOL))-(SALES_VOL/SQRT(2*PI()))*EXP(-(((SALES-LTVIi)/(SQRT(2)*SALES_VOL))^2))+SALES/2-(-0.5*SALES*ERF((SALES)/(SQRT(2)*SALES_VOL))-(SALES_VOL/SQRT(2*PI()))*EXP(-(((SALES)/(SQRT(2)*SALES_VOL))^2))+SALES/2)))/LTVIi

Where SALES = Average Sales ratio for the segment

Where SALES_VOL = Standard deviation of sales ratios for observed sales in a segment

The formula has been fully implemented in the accompanying Excel example making implementation straightforward. The formula above appears complex, however it is simply a continuous quantitative means of ensuring that regardless of the indexed LTV, the collective provision is greater than 0. As illustrated in the figure below. In the figure below an expected 10% fall of property prices and the fall back parameters described below are being applied.

Figure 38 Illustration of LGL formula



The approach to defining each parameter is described below and an example is provided of the calculation of each component. If sufficient data is not available to populate the formula above for a segment the following prudent assumptions should be used

- Sales ratio (SALES) = 75%
- Sales ratio volatility (SALES_VOL)= 18%
- Costs (COST) = 5%
- Time to sale (T) = 3 years
- Property price projection = [to be provided by ECB for each region]
- Effective interest rate (EIR) = 4%

The specific approach to parameterising each of the parameters is described below. Please also refer to the provided example calculation in *"LGL illustration – mortgages.xls"*.

Appraiser discount

The appraiser discount is calculated based on the findings from the reappraisal of the sample of exposures. The appraisal discount is calculated as the average % reduction in the bank's indexed valuation compared to the valuation by the independent, external party appraiser. For example,

- Bank valued a property at €100 K in Dec 2010
- The property index has fallen by 20% between Dec 2010 and Dec 2013
- This implies the bank's indexed valuation is €80 K
- An independent, external party appraiser values the property at €75 K, implying an appraisal discount of -6.25% on this property

The average appraisal discount for the sample should be value weighted. If appropriate the appraiser discount may be differentiated by sub-segment at the NCA bank team's discretion (as illustrated in the accompanying Excel example).

The application of the appraiser discount is subject to a materiality threshold of 5% at the portfolio level. Specifically, if the application of the appraiser discount as described above results in a change in collateral value of less than 5% across the total portfolio then it should not be applied. In this circumstance updated property values for properties directly re-appraised as part of the AQR should still be used.

Sales ratio (SALES)

The sales ratio is calculated based on sales log data by comparing the indexed last valuation to the observed proceeds for completed property sales following foreclosure. The sales ratio for a given property is simply the observed proceeds divided by the indexed valuation. Any double

count with the appraisal discount should be removed by adjusting the indexed valuation for the appraisal discount

Analysis of the sales log should be used to determine average sales ratios to be applied across the performing and non-performing portfolio. Sales ratios may (if relevant/possible) be calculated by segment. Sales ratios should be value weighted.

A worked example is included in Table 3 and Table 4 of the 'Parameter Calcs' tab of the *"LGL illustration-mortgages.xls"* spreadsheet.

Sales ratio volatility (SALES_VOL)

The sales ratio volatility is calculated from the same data as the sales ratio, and is simply the standard deviation of the observed sales ratios for the sales log for each sub segment. NCA bank teams may differentiate sales ratio volatility by collateral value and region if differentiation appears meaningful.

A worked example is included in Table 3 and Table 4 of the 'Parameter Calcs' tab of the *"LGL illustration-mortgages.xls"* spreadsheet.

Costs (COST)

Average costs as a % of exposure should be calculated as the average observed costs divided by the average exposure for all resolved cases. Unresolved cases (i.e. cases where a sale has not been completed should be excluded).

Again, a worked example is provided.

Time to sale (T)

Time to sale is the average time between default of a mortgage and sale of the underlying property. This can be difficult to observe from data given right censoring of data (i.e. time to sale can't be fully observed for a default cohort until all cases have been resolved which will take a very long time) and given specific issues in particular markets around foreclosure processes (e.g. legal moratoria). Time to sale may therefore be set based on expert judgement having considered the bank's processes, current legal context and available data

Effective interest rate (EIR)

Effective interest rate should be defined as per IAS 39. In the absence of data, for the purposes of parameterising the challenger model, an average effective interest rate may be applied across a portfolio or sub-segment at the NCA bank team's discretion

Impact of Mortgage Indemnity Guarantee (MIG)

If the bank uses MIG as a loss mitigant then the LGL should be reduced by an appropriate amount reflecting the MIG, accounting for the probability that the claim will be successful and the level of the cover. If reliable statistics around claim success rates are not available then MIG should be ignored, unless objective evidence suggests otherwise.

7.7.1.5 Example calculation

An example calculation has been provided *"LGL illustration – mortgages.xls"*.

7.7.2 LGL FOR OTHER RETAIL

7.7.2.1 Data required

The following information is required for all facilities where a write-off has occurred in the last 36 months:

- Observed cumulative recoveries as a % of outstanding balance on cases with write-offs; and
- Segmentation information (i.e. product type).

If no data is available, the following benchmarks should be applied

- For secured products: 60%; and
- For unsecured products: 90%.

For the avoidance of doubt, the approach is not materially influenced by differences in bank's write-off policy as the analysis is focused on cash recoveries from write-offs not the level of the write-off. If the bank is relatively quick to write-off exposures then the cure rate, described above, will be lower and the cash recoveries that influence LGL will be higher, but in combination the implied provision should be largely indifferent to the write-off policy that has been used.

7.7.2.2 Sub-segmentation to be applied

The specific segmentation applied will be constrained by the available data. The most important segmentation dimension would be product type. The following product segments are suggested (if possible):

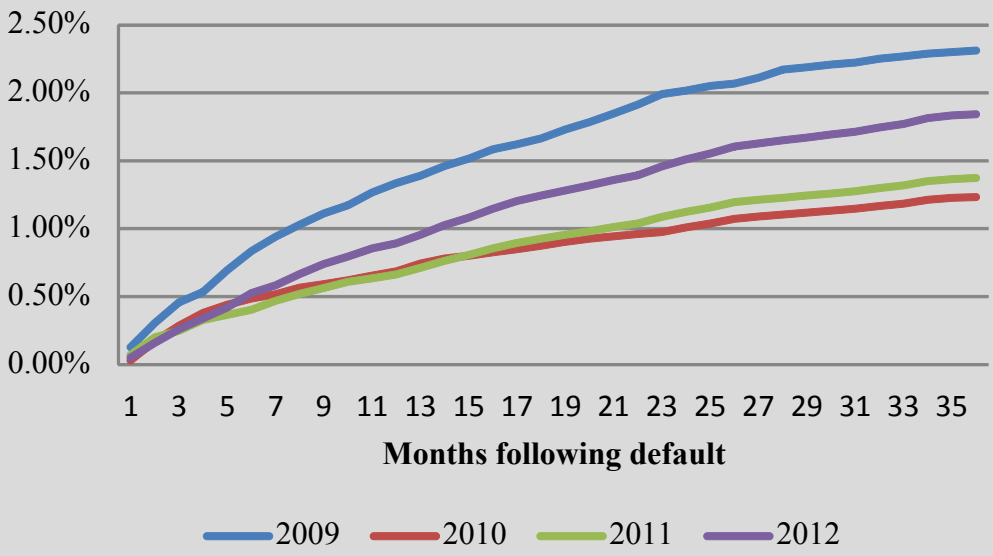
- Personal loans;
- Overdrafts;
- Credit cards;
- Asset based lending (if relevant);
- Auto Finance;
- Other retail non-SME secured;
- Other retail SME secured;
- Other retail SME unsecured.

7.7.2.3 Calculation approach

Average recoveries on cases with write-offs should be directly observed for each product segment. Assumptions can be arrived at directly from bank's analysis of recoveries (e.g. from collections departments) to the extent they are not influenced by recoveries from cases that would be considered cures. As such, only limited prescription in the approach for this segment is provided. Instead an illustrative example is used to indicate how the calculation should be performed. Note that data on recoveries should be assessed carefully to ensure practices such as loan sales do not influence the results (in this case a loan sale should be treated as a recovery equal to the sale price).

Cumulative recoveries from personal loans with write-offs are shown below. For the bank in question, movement to late stage collections would be accompanied by a write-off and therefore the client would be viewed as a "non-cure". The LGL can then simply be read off from the average long term recoveries by default cohort. Based on the example below an LGL of 98% is assumed.

Figure 39 Analysis of cumulative recoveries for write-off cases



Where loan sale is the predominant approach for dealing with late stage collections, sales prices should be used as a proxy for LGL. Some misalignment between definitions used for cash recoveries analysis and those used in cure rate analysis is to be expected. NCA bank team's should ensure any simplifications applied in arriving at LGL assumptions do not unduly influence the outcome of the analysis. In the example above it can be stated with confidence that if cures are included in the recoveries data it will not unduly affect the outcome as LGL is so high.

Recoveries should be discounted based on the observed average time between default and recoveries.

7.7.2.4 Example calculation

An Excel example of the calculation is attached to the Manual (*"LGL illustration – Retail other.xls"*)

7.8 CHALLENGER MODEL – LOSS GIVEN IMPAIRMENT (LGI) CALCULATION FOR NON-RETAIL EXPOSURES

This section describes below:

- Sub-segmentation to be applied;
- Data required;
- Calculation approach; and

- Example calculation.

7.8.1 DATA REQUIRED

The following information is required, all of which will be available in the loan tape

- On balance sheet exposure (E_ONBAL);
- Off balance sheet exposure (E_OFFBAL);
- CCF (E_CCF) (with the above used to calculate exposure at the debtor level (D_EXP));
- Specific impairment provisions (P_SPECD);
- Relevant segment information (e.g. product) (S_AQRSD); and
- LTV (D_LTV).

7.8.2 SUB-SEGMENTATION APPROACH

Parameters should be segmented by indexed LTV as follows:

LTV (where LTV calculated based on indexed last valuation) and determined at the debtor level

Table 61 LTV-based segmentation

AQR asset segment	LTV[62] segmentation
Corporate (Large and SME) and project finance	0–60%, 60–80%, 80–100%,100%–150%, 150–200%, 200%+, unknown/no collateral
Shipping, aviation, CRE	0–60%, 60–80%, 80–100%,100%+, unknown/no collateral

Sub-segments with immaterial exposure or where the segment cannot be defined need not be separately analysed but can be grouped with the most appropriate other sub-segment.

7.8.3 CALCULATION APPROACH

LGI will be set by calculating the average provision divided by exposure for exposures that have become NPE in the last 12 months by sub-segment. Analysis will be exposure weighted. Analysis should be adjusted for extrapolated findings from file reviews – i.e. average provision should be after AQR adjustments. Where data is too sparse in a particular segment to produce reliable assumptions, segments should be merged with similar sub-segments.

[62] V is total indexed collateral value

7.8.4 EXAMPLE CALCULATION

An illustration of the calculation is shown in the accompanying spreadsheet *"LGI illustration.xls"*.

7.9 CHALLENGER MODEL – ADJUSTMENT FOR ONE-OFF CIRCUMSTANCES

The challenger model is, as a necessity of the exercise, built using a short data history. As a result of this it is highly reflective of current conditions and hence in line with the requirements of IAS 39 AG 89. However, as mentioned in that paragraph it may also be necessary "*to remove the effects of conditions in the historical period that do not exist currently"*. Adjustments are unlikely to be required for general economic circumstances as the historical time period used is so recent (unless there is objective evidence of a significant change in business conditions), but it may be necessary to make adjustments for one-off circumstances that are unlikely to be repeated. The primary examples of this are likely to be regulatory exercises focused on marking previously un-marked NPEs or Forborne loans that may concentrate such events within one year when otherwise their transition in states would have been more spread out.

In cases such as this adjustments can be made to the calibration of the challenger model if they are grounded in quantitative evidence. Such adjustments are likely to be a key issue for discussion during Quality Assurance.

An illustration of such a calculation is shown in the accompanying spreadsheet *"PI illustration.xls"*.

7.10 CHALLENGER MODEL – PROVISIONING CALCULATION

Provisioning calculations are to be performed at the homogeneous pool level. That is, at the level at which each segment has a different parameter for any of PI, LGI or CR, and LGL. LGL for retail mortgage should be grouped by LTV decile.

The calculation of the implied provisioning is simply a matter of performing the calculations below

For retail

$CP_x = [PI_x \times (1\text{-}CR_x) \times LGL_x] \times (ONBAL_x + CCF \times OFFBAL_x)$

For non-retail

$CP_x = [PI_x \times LGI_x] \times (ONBAL_x + CCF \times OFFBAL_x)$

The table of results will need to be made available to the ECB using a consistent template (to be provided by the ECB).

Figure 40 Illustration of table using retail mortgage segments as an example

Product segment	Product type	Risk class	Region	Current indexed LTV	PD	CR	LGL (provisions)	On balance sheet exposure	Off balance sheet exposure	Provision estimate	Provision estimate %	Bank provisions	Difference in provision estimate
Retail mortgages	PDH	Normal	North	5%			0%	85.15462	0.865577	0.00	0.00%	0.00	0.00
				15.00%			0%	85.10059	0.631388	0.00	0.00%	0.00	0.00
				25.00%	0.50%		0%	88.40487	0.664033	0.00	0.00%	0.00	0.00
				35.00%			1%	2.165161	0.752288	0.00	0.00%	0.00	0.00
				45.00%			2%	58.5843	0.481892	0.00	0.00%	0.00	0.00
				55.00%		70%	5%	4.603256	0.016822	0.00	0.01%	0.00	0.00
				65.00%	1%		10%	37.62735	0.240843	0.01	0.03%	0.01	0.01
				75.00%			16%	85.56064	0.426041	0.04	0.05%	0.02	0.02
				85.00%			24%	28.65591	0.928312	0.04	0.14%	0.02	0.02
				95.00%	2%		31%	60.78789	0.337678	0.11	0.18%	0.06	0.06
				105.00%			37%	84.47394	0.666245	0.19	0.22%	0.09	0.09
		Default >12 months	South	5%			0%	24.28258	0.293798	0.00	0.01%	0.00	0.00
				15.00%			0%	36.84592	0.032566	0.02	0.06%	0.02	0.00
				25.00%	100%		0%	43.37545	0.241497	0.11	0.25%	0.10	0.01
				35.00%			1%	56.42058	0.219245	0.48	0.84%	0.47	0.01
				45.00%			3%	26.82155	0.092	0.63	2.32%	0.57	0.05
				55.00%		30%	7%	76.45247	0.389659	3.96	5.16%	3.60	0.36
				65.00%	100%		13%	75.02113	0.996147	7.14	9.40%	7.09	0.05
				75.00%			21%	84.71404	0.76844	12.44	14.55%	11.35	1.09
				85.00%			28%	47.65287	0.689329	9.55	19.76%	9.45	0.11
				95.00%	100%		35%	50.18425	0.815065	12.50	24.50%	12.00	0.50
				105.00%			41%	33.40073	0.552318	9.70	28.57%	9.32	0.38

The table will also be fed into the stress test analysis to ensure bank PD and LGD parameters used in the stress test are appropriately conservative.

The Excel version *"CP results illustration.xls"* of the example table accompanies this document.

7.11 APPLICATION OF FINDINGS

Once the comparison between the NCA bank team's challenger model and the bank's calibration are complete, the NCA bank team should make an assessment as to whether the bank should be required to increase provisions.

- If the significant bank's aggregate provisions are higher than the NCA bank team's estimate then there is no issue with provisioning levels
- If the NCA bank team's estimate is higher than the bank's, but by less than 5% then there is no need to investigate further, and the significant bank's aggregate provisions should be accepted

- If the NCA bank team's estimate is higher than the bank's by 5-10% but the NCA bank team feels there are good reasons for this relating to data or methodology (not including methodology used by the significant bank which is known not to be fully compliant with regulatory requirements) then there is no need to investigate further, and the significant bank's aggregate provisions should be accepted
- In all other circumstances the NCA bank team should seek to understand the reasons why the provisions calculated by the challenger model exceed the significant bank's own provisions by investigating the significant bank's model and data.

In the investigation, the key elements of regulatory requirements highlighted in 7.4 should be revisited using the challenger model as a quantitative guide to the implications of the requirements. For example, the challenger model provides a benchmark of how high a point in time PI should be expected to be for the significant bank's portfolio. Note that, if the difference is attributed to a different period of calibration (as opposed to an error in the calculation of the bank's models) then this may be considered as mitigation if there are plausible well evidenced reasons to believe that 2013 is not representative of a point in time calibration and hence all or part of the deviation can be explained by use of a wider calibration window. However the bank would need to have available the historical information to justify this combined with plausible explanations for why 2013 is not representative (after adjusting for one off effects such as those described above..

If, after the investigation detailed above, the bank's collective provisioning model is found to be out of line with accounting rules then the challenger model should be used to determine an adjustment for collective provisions for use in the AQR-adjusted CET1% and the stress test. **The challenger model is not intended to be forced on banks for use in accounts following the CA.** The NCA bank team's conclusions on this issue will be reviewed closely by both the ECB and the NCA.

7.12 OUTPUTS

The objective of the collective provisioning analysis is fourfold:

- To identify cases where the bank's collective provisioning approach is not in line with accounting rules
- Where the collective provisioning approach is not in line with accounting rules provide a quantitative means of assessing the impact of correcting the model/calibration for use in the CA
- To produce point in time PI an LGI parameters that can be used to feed into the stress test

- To identify the need for mitigating actions by banks with respect to collective provisioning models or policies

The following output will need to be produced for this workblock:

Table 62 Outputs for Collective provision analysis

Workblock	Output
7. Collective provision analysis	Complete T7 Collective provisioning results template O7B PowerPoint presentation describing any remedial action the bank should take as a result of Collective provision analysis

8 LEVEL 3 FAIR VALUE EXPOSURES REVIEW

This chapter provides the detailed instructions required by the NCA bank team to carry out the level 3 fair value exposures review component of Phase 2, scheduled for completion during the period from March to July 2014. The review is centred on ensuring that the bank can appropriately evaluate the fair value of positions accounted for under the classifications: available for sale (AFS), designated at fair value through P&L (designated), and held for trading (HFT)[63]. It will focus on areas where misstatement of positions is most likely, and where such an event may have a material impact on the bank's overall CET1% ratio. Therefore, the review will focus on assets classified as level 3 within the fair-value hierarchy of IFRS 13[64], where fair value is determined based on unobservable input parameters.

8.1 SUMMARY OF APPROACH

The level 3 fair value exposures review is focused on assets classified as level 3 within the IFRS 13 fair value hierarchy across both the banking book and trading book, and will be applied to those significant banks for which the review is most likely to have a material impact. This may be either because:

- The bank has significant level 3 securities or loan portfolios;
- The level 3 derivatives exposure is material; or
- The size of the trading book as a whole is material.

The Review itself will consist of three elements, each focused on different categories of the level 3 exposure:

1. **Level 3 revaluation for non-derivative assets:** this element will provide an independent, external revaluation for material level 3 non-derivative assets. Any discrepancies between the bank's original valuation, and an independent, external valuation will be assessed and if the independent, external valuation is lower, the difference will be deducted from available capital. Additionally, valuations of some assets classes will be benchmarked across banks to provide a further triangulation point. Positive deviations may offset negative deviations within a portfolio;

[63] A prerequisite of the review is that the classification of AFS, Designated and HFT, and the application of IFRS 13 Fair Value Hierarchy are appropriate. This will be reviewed as part of the PP&A Review (see Section 1.4.2 for further details). Any material issues identified in the PP&A Review with respect to these classifications will be corrected and incorporated for this review subject to resourcing and timing constraints.

[64] nGAAP banks should identify those positions for which valuation relies on unobservable parameters

2. **Trading book core processes review:** this element will provide a qualitative assessment of the efficacy and appropriateness of processes used to estimate fair value for all trading book positions. Remedial actions will be mandated to address any issues identified;

3. **Level 3 derivative pricing models review:** this element will provide an assessment of the robustness of the most material pricing models used to value level 3 derivatives[65]. A reserve will be quantified (where possible) and deducted from available capital to address any issues identified, in addition to possible remedial actions.

Note that for a given Bank, it may be that one or more of the elements above may not be relevant. For instance, a bank with a large trading book may have no, or very small, level 3 derivatives or securities. Or, a Bank may have material level 3 assets, but an extremely low level 3 assets/RWA ratio. As such, each element will be applied to each relevant bank on a case-by-case basis. Note that a sub-set of the significant banks will be required to take part for each of the three elements respectively:

4. **Level 3 revaluation for non-derivative assets:** All significant banks with material non-derivative level 3 assets (as determined during Phase 1);

5. **Trading book core processes review:** All banks with material trading books[66], selected as in-scope for the Trading Book Review;

6. **Level 3 derivative pricing models review:** Only banks selected as in-scope for the Trading Book Review, which also have material level 3 derivative exposure (both on a standalone basis and as a percentage of total Bank RWAs), will participate in the level 3 derivative pricing models review (based on the Trading Book pricing model selection during Phase 1).

The next three sections provide further details for each of the three elements.

8.2 ELEMENT 1: LEVEL 3 REVALUATION OF NON-DERIVATIVE ASSETS

The following sub-sections describe the approach to revaluing non-derivative level 3 assets. This component should be carried out by the NCA bank team including, where appropriate, third parties with expertise in the evaluation of prices for level 3 non-derivative assets, including the ability to determine the most suitable valuation for a level 3 non-derivative when

[65] Both assets and liabilities are included here, as an under-valued trading book liability is equivalent to an over-valued trading book asset, note this is aligned to CRR Article 105 with all trading book positions in-scope

[66] Defined as having a total trading book at Dec 2013 greater than €10BN

two divergent prices are available using divergent assumptions and/or techniques. Different parties may carry out valuations across different asset classes depending on expertise.

8.2.1 SUMMARY OF APPROACH

The level 3 non-derivative asset revaluation will involve the revaluation of the Bank's material level 3 non-derivative assets by the NCA bank team. The assets in scope for revaluation are as follows:

- Fair-valued loan portfolios;
- Level 3 single name bonds;
- Level 3 securitisations;
- Held real estate;
- Participations and individual private equity investments.

Each asset class will be assessed for materiality, and if an asset class is deemed to be material (based on the output of Phase I), a sample of assets will be selected from that class and revalued by the NCA bank team. The sampling will focus on capturing the most material exposures in each class across the trading book and banking book in combination – there will not be separate samples for banking book and trading book.

An additional benchmarking exercise will also be carried out for level 3 single name bonds and level 3 securitisations, as part of the cross-country consistency checks carried out during CPMO QA. For this benchmarking exercise, banks will be required to provide data for their level 3 bond and securitisations portfolios at issuer/tranche level (e.g. ISIN where available, notional, MTM, coupon, maturity, etc.).

Following the sampling and benchmarking, tan independent, external, revaluation for each of the sampled assets will be compared against the bank's original mark, taking into consideration both the methodology used and the value itself. If the new valuation is lower than the original, the NCA bank team will outline why the new valuation is appropriate, using the bank's original methodology as a reference. If no flaws are found in the new valuation, the bank must either adjust the carrying amount in its accounts or increase the reserve against the asset, following the CA. In doing so the bank would be expected to adjust for movements in the market and holdings of the asset since the review was carried out. The aggregate adjustment across all in scope assets will be calculated for each asset class and entered into the AQR-adjusted CET1% calculation. This is described in Section 9.5 of this document. Note that level 3 securitisations will be the only asset type where the AQR-adjusted CET1% calculation will include projection of findings.

Note that the revaluation should include all elements included in the table below.

Table 63 Fair value adjustments

Adjustment	Description	In IFRS 13?
Close out/bid-offer	Adjustment to account for difference between mid-market and relevant bid/offer price	Yes
Model risk	Adjustment needed due to known limitations in a model or its usage – derived from comparison with other models	Yes
Parameter uncertainty	Uncertainty adjustments when some parameters are not observable in the market	Yes
Liquidity valuation adjustment	Adjustments needed due to the uncertainty over the ability to transact at observed market levels	Yes
Future funding and investing cost	Adjustments made where it is appropriate to value the long-term funding implications of a transaction	Yes

The remainder of this section details the following:

1. Indicative timeline;
2. Detailed approach;
3. Outputs.

These are discussed in turn below.

8.2.2 INDICATIVE TIMELINE

Table 64 Indicative timeline for level 3 revaluation of non-derivative assets

Task	Indicative date[67]
Commence review	10 March 2014
Finalise positions to be revalued	4 April 2014
Submit benchmarking data	18 April 2014
Finalise revaluation results	27 June 2014
Finalises comparison of pricing methodologies	27 June 2014
Complete review	**27 June 2014**

8.2.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 65 Illustrative models, parameter sheets and templates for the level 3 revaluation of non-derivative assets

Template	Summary of contents	Frequency of submission to CPMO
T8A. Revaluation of non-derivative level 3 assets findings template	• Template to present results of revaluation of non-derivative level 3 assets • Results from template are used in the AQR-adjusted CET1% ratio template	Submission of benchmarking, and finally once complete

8.2.4 DETAILED APPROACH

The following sections provide further detail on the approach for revaluation of different types of level 3 asset:

- Level 3 single name bonds;
- Fair-valued loan portfolios;
- Level 3 Securitisations;
- Held real estate;
- Participations and individual private equity investments.

[67] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones

i Approach for revaluation of level 3 single-name bonds

The review treatment for this section applies to single-name bonds which are accounted at fair value and classified as level 3 in the IFRS fair-value hierarchy. The decision as to whether level 3 bonds are in-scope for a given institution will be made in Phase 1. Where selected in Phase 1, the 20 most material level 3 bonds (measured as MTM x Duration[68] x spread) should be re-valued by the NCA bank team. The revaluation will be calculated at the individual bond level. The exact revaluation methodology is left as a decision for the NCA bank team; however all fair valuations must be consistent with the principals described in IFRS 13. This should include:

- Ensure parameters used in the calculation are market consistent, including yield assumptions;
- Valuation parameters should reflect the specific characteristics of the bond, including: coupon, currency, step-ups, call options, embedded derivatives[69], counterparty credit rating, subordination, security etc.;

Details of the methodology used by the valuer must be delivered to the NCA before completion of the valuation and the NCA must satisfy itself that the approach is consistent with IFRS 13.

If the valuer's fair valuation is lower than the bank's original booked value (net of any reserves), then the NCA bank team should understand the reasons for the difference. Where no valid reason can be found to support the bank's valuation over the NCA bank team's, the fair value of the portfolio will be adjusted to match the NCA bank team value or a reserve taken following the CA (taking into account movements in the market and changes in the bank's holdings). The adjustment to fair value /fair value reserves /AFS reserves will also be entered into the AQR-adjusted CET1% calculation (see Section 9.5.2).

If the average change in value across the sample is a decline of 10% or more, the remaining un-sampled level 3 bonds must also be re-valued using the same approach, following the completion of the CA. This second set of revaluations must be completed by October 2015 and the results submitted to the NCA and the SSM.

As stated above, the valuation methodology for the bond portfolio may be chosen given the particular circumstances. A range of approaches are possible. In most instances we would expect a simple Relative Value Approach to be applied. That is: Project contractual cashflows and discount based on market spreads and the appropriate risk free rate. Market spreads are

[68] Duration is floored at one year.

[69] Here embedded derivatives refers to any derivative relating to the cash flows of the bond itself (e.g. callable, putable, convertible, etc.), the treatment of fair valued structured notes and any own issue debt with complex embedded derivatives with unrelated underlying to the debt instrument itself will be included in the Level 3 derivative pricing models review.

defined for unlisted companies based on comparable analysis. Typically this would be based on external rating, though if external rating is not available, based on a comparison of the financial position of the counterparty.

The below example demonstrates the approach. The particulars of the example are:

- Bond relates to a utility company
- Bond is a 10 year bond, fixed rate with a coupon of 5 and a notional of 100. Annual coupon paid at end of year
- Utility company is not rated and there is no market CDS, though company is benchmarked to be equivalent to a BBB utility, and market benchmarks indicate an Option Adjusted Spread of 250BPS would be appropriate
- Euro denominated

	0	1	2	3	4	5	6	7	8	9	10	Total
Contractual cashflow		5	5	5	5	5	5	5	5	5	105	150
Risk free rate		1.9 %	1.9 %	1.9 %	1.9 %	1.9 %	1.9 %	1.9 %	1.9 %	1.9 %	1.9 %	
Spread		3.5 %	3.5 %	3.5 %	3.5 %	3.5 %	3.5 %	3.5 %	3.5 %	3.5 %	3.5 %	
Discount rate	100 %	95 %	90 %	85 %	81 %	77 %	73 %	69 %	66 %	62 %	59 %	
Discounted cashflows		4.7	4.5	4.3	4.0	3.8	3.6	3.5	3.3	3.1	62.0	97

Note: Cashflows are fixed and risk free rate is constant given this is a bond with fixed coupon. Clearly if the security was, for instance, amortising, callable or floating rate this would not be the case.

For bonds with embedded optionality that is not already captured in the spread, it is important that the optionality is reflected in the valuation as appropriate using stochastic calculus, simulation or simplified approaches. The specific approach will be dependent on the context.

When valuing a bond, the NCA bank team must also consider whether there are any hedging derivatives. If this is the case, then the hedging derivatives should also be revalued to ensure that the bond and the hedge are dealt with consistently

A benchmarking exercise will also be carried out for level 3 single name bonds, as part of the cross-country consistency checks carried out during CPMO QA. For this benchmarking exercise, banks will be required to provide data for their bond portfolios at issuer/tranche level (e.g. ISIN where available, notional, MTM, coupon, maturity, etc.). This data will be analysed by the CPMO and outliers will be highlighted to NCA bank teams for consideration. A template

will be released during early March to capture bond data and valuation assumptions to allow for benchmarking.

For banks that have bonds that are in scope for Phase 2, the spread assumptions NCA bank teams apply and the approach to dealing with embedded optionality will be submitted to the CPMO during the valuation process. Where relevant the CPMO will provide feedback on the assumptions applied, including benchmarking vs assumptions used in other banks and available market parameters. Where relevant, the CPMO will request adjustments to parameters where it can be evidenced that the assumptions are inconsistent with current market values.

ii Approach for revaluation of fair-valued loan portfolios

The review treatment for this section applies only to loans which are accounted at fair value ("fair-valued loans"). This does not include purchased loans which are initially booked at fair market value but are subsequently classified and accounted under amortised cost.

Fair-valued loan portfolios are in scope for review if an incorrect valuation could pose a material risk to the bank's solvency as determined by Phase 1. If the bank has material fair-valued loan portfolios, **all** of these portfolios will be independently valued by the NCA bank team. It is expected that the revaluation will be calculated at the portfolio, rather than the individual loan, level. However, the NCA bank team will be free to treat each the components of the loan portfolio on an individual basis in a manner consistent with the approach described for bond portfolios above. The exact revaluation methodology is left as a decision for the NCA bank team; however the following general principals will be followed:

- All fair valuations must be consistent with the principals described in IFRS 13 – that is they should be market consistent as opposed to being based on (amortised) cost concepts;
- PD and LGD assumptions used in the valuation should be consistent with the current observed behaviour of the portfolio;
- PD and LGD projections used in the valuation should be aligned with the base case scenario provided by the ECB;
- The valuation should take account of prepayment behaviour and potential for refinancing at the maturity date;
- Discount rates should reflect market yields for similar asset classes **not** the effective interest rate or the bank's weighted average cost of capital;
- Any collateral valuation that is required to value the portfolio must be consistent with the relevant section of this document (see section 5).

- credit file review of the sort envisaged more widely for the AQR **is not explicitly required** for loan portfolio valuation. Instead internal ratings or other means of segmenting PD and LGD assumptions may be applied. However, this would typically involve some level of limited re-underwriting of exposures to ensure segmentation data can be applied directly without adjustment. This would be left to the discretion of the third party valuer depending on the context.
- The analysis may require a longer historical time series than requested in the AQR loan tape – this data will need to be obtained bi-laterally from the bank. This longer time series would only be required in the context of fair valuation of loan portfolios.

In the example below we illustrate a simple approach for dealing with a homogeneous mortgage portfolio

- Portfolio of good quality retail mortgages (LTV of 50-70%, 2009 vintage, 20 year remaining maturity, all performing, no forborne)
- Current prepayment rate of 5%
- Current default rate of 1%, projected expected recovery rate of 90% (example is simplified by assuming defaulted loans all roll to foreclosure rather than returning to performing book)
- Assume servicing costs of 20BPS
- Priced at Euribor +150BPS – lifetime tracker
- Assumed discount rate of EURIBOR forward curve + 150BPS (funding cost) and 40BPS (cost of capital)
- Stable macro-economic outlook

Example is also simplified for the purposes of ease of communication in this document by assuming annual interest rate payments at end of each period and that all defaults result in recovery of cashflows in 24 months time. Interest paid on defaulted assets is captured in the recovery rate.

In the example, the mortgage pool would be valued at 95% of nominal.

Figure 41 Illustrative mortgage pool valuation

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
EURIBOR		0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	2.6%	2.9%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	
Interest rate on mortgages		2.0%	2.3%	2.6%	2.9%	3.2%	3.5%	3.8%	4.1%	4.4%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	
Contractual balance	1	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.0			
Prepayment rate		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			
Performing outstanding bal	1	0.9	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0			
Default rate		1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%			
Cumulative default rate		1%	2%	3%	3%	4%	5%	5%	6%	6%	6%	7%	7%	7%	7%	8%	8%	8%	8%	8%	8%			
Recovery rate		90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%			
Cashflows from servicing costs		(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
Casflows from default cases				0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Cashflows from amortisation		0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02			
Cashflows from prepayment		0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00			
Cashflows from interest		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00			
Total cashflows		0.11	0.10	0.10	0.10	0.09	0.08	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.00	0.00	
Discount rate		2.4%	2.7%	3.0%	3.3%	3.6%	3.9%	4.2%	4.5%	4.8%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%	
Discount multiple	1	0.98	0.95	0.92	0.89	0.86	0.83	0.80	0.76	0.73	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.49	0.46	0.44	0.42	0.40	0.38	
Discounted cashflows		0.10	0.09	0.09	0.09	0.08	0.07	0.06	0.06	0.05	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.95

Details of the methodology used by any valuer must be delivered to the NCA before completion of the valuation and the NCA must satisfy itself that the approach is consistent with IFRS 13. Methodology documents will be provided to the CPMO on request.

For banks that have loan portfolios that are in scope for Phase 2, the yield assumptions they apply will be submitted to the CPMO during the valuation process. The C-PMO will provide feedback on the assumptions applied, including benchmarking vs assumptions used in other banks and available market parameters. Where relevant, the C-PMO will request adjustments to parameters where it can be evidenced that the assumptions are inconsistent with current market values.

If the valuer's fair valuation is lower than the bank's original booked value (net of any AFS reserves), then the NCA bank team should use the details of the new valuation approach to establish the differences in the methodology between the bank and the NCA bank team. Where no valid reason can be found to support the bank's valuation over the NCA bank team's, the carrying value of the portfolio will be adjusted to match the NCA bank team value and used as an input to the AQR-adjusted CET1% calculation as discussed in Section 9.5.

For loan portfolios that are held at fair value or in AFS due to the existence of cashflow hedges, the associated derivatives should also be included in the valuation to insure assumptions around interest rate curves are consistent.

iii Approach for revaluation of level 3 securitisations

The review treatment for this section applies to securitisation notes which are accounted at fair value and classified as level 3 in the IFRS fair-value hierarchy. The decision as to whether level

3 securitisations are in-scope for a given institution will be made in Phase 1. Where selected in Phase 1, the most material level 3 securitisations rated at **BB- or above** are selected such that at the minimum 50% of the carrying amount is included and the top 20 bonds by risk (defined as MTM x Duration[70] x spread) are also included

This sample of securitisation notes will be re-valued by the NCA bank team. This rating restriction does not apply to notes for which the capital requirement is calculated under the Supervisory Formula Approach. The revaluation will be calculated at the individual note level. The exact revaluation methodology is left as a decision for the NCA bank team; however all fair valuations must be consistent with the principals described in IFRS 13. This should include:

- Ensuring all parameters are market consistent where feasible. For instance, when valuing a collateralised debt obligation (CDO), risk parameters (constant default rate (CDR), constant prepayment rate (CPR), severity, correlation) for the underlying notes should wherever possible be derived from market observed parameters, rather than from the historical behaviour of the underlying reference pools;
- Valuation reflects specific features of the security including embedded derivatives[71], cash flow triggers, reserve accounts etc.;
- Ensuring where a range of approaches are possible and no 'right' model exists, an appropriately prudent approach is taken – e.g. NAV based approach only acceptable over a cash flow based approach if it is more conservative.

The use of market standard tools such as INTEX and TREPP is acceptable for applicable positions[72], depending on the ability of such tools to capture deal specific features etc. This should be confirmed by the relevantly experienced member of the NCA bank team.

Details of the methodology used must be delivered to the NCA before completion of the valuation and the NCA must satisfy itself that the approach is consistent with IFRS 13.

If the valuer's fair valuation is lower than the bank's original booked value (net of any reserves), then the NCA bank team should use the details of the new valuation approach to establish the differences in the methodology between the bank and the NCA bank team. Where no valid reason can be found to support the bank's valuation over the NCA bank team's, the

---

70 Duration is floored at one year.

71 Here embedded derivatives refers to any derivative relating to the cash flows of the note or reference assets. The treatment of fair valued structured notes and any own issue debt with complex embedded derivatives with unrelated underlying to the instrument itself will be included in the Level 3 derivative pricing models review.

72 Market standard tools should only be used for those positions where the tool has been validated; this approach would not be suitable if the standard tool is unable to capture all features of exotic structures in-line with market practice (e.g. revolving pools or exotic liability cash-flow triggers).

carrying value of the portfolio will be adjusted to match the NCA bank team value and the corresponding capital impact calculated as per Section 9.5.2.

For the purposes of determining the AQR-adjusted CET1%, the total impact of the sample revaluation will be extrapolated across the remaining un-sampled securitisation notes, by scaling by carrying amount. For example, if 60% of securitisations are sampled and a valuation adjustment of 10% is found on average, a 10% valuation adjustment will be applied to the remaining 40% of the portfolio. Extrapolation should only be applied if the deviation between the bank's valuation and the NCA bank team valuation is greater than 5%

If the average change in value across the sample is a decline of 10% or more, the remaining un-sampled level 3 securitisations must also be re-valued using the same approach following the CA. This second set of revaluations must be completed by October 2015 and the results submitted to the NCA and the SSM.

An additional benchmarking exercise will also be carried out for level 3 securitisations, as part of the cross-country consistency checks carried out during CPMO QA. For this benchmarking exercise, banks will be required to provide data for their securitisations portfolios at issuer/tranche level (e.g. ISIN where available, notional, MTM, coupon, maturity, etc.). This data will be analysed by the C-PMO and outliers will be highlighted to NCA bank teams for consideration.

iv Approach for revaluation of held real estate

The review treatment for this section applies for real estate assets which are held in the banking book either through investment or foreclosure, and are accounted at fair value ("Held real estate"). This does not include the bank's own property (headquarters, branches etc).

The decision as to whether held real estate is in-scope for a given institution will be made in Phase 1. Where selected in Phase 1, a sample of the bank's held real estate will be re-appraised by a valuer as appointed by the NCA. The sample will include the following:

- The **top 10** assets (by carrying amount) in each of the following four property classes (where they exist):
  - Residential property;
  - Commercial, income-producing;
  - Commercial, in development;
  - Land.

- A **random sample of 100** properties not included in the above (to the extent 100 exist). Properties which have already been appraised by a valuer using a market value approach (consistent with the approach described in the relevant section of this document) in the last 12 months may be indexed to the current date rather than re-valued. It will be the responsibility of the entity-level coordinator to verify this is the case before the need for reappraisal is dismissed.

Market values of foreclosed real estate should be provisioned below market value to reflect administration costs, sales costs and expected haircuts on sale vs market value. These assumptions should be informed by the bank's own data or system wide data on foreclosed property sales. Assumptions should be adjusted for "right censoring" – i.e. adjusting for the fact that properties that have been sold tend on average to be easier to sell and therefore have lower haircuts vs market values.

If the average change in value due to reappraisal across the sample is a decline of 10% or more, the remaining un-sampled held real estate must also be re-valued using the same approach, following completion of the CA. This second set of revaluations must be completed by October 2015 and the results submitted to the NCA and SSM.

v Approach for revaluation of participations/individual private equity investments

The review treatment for this section applies for participations and individually-named private equity assets ("Participations/IPE"). This includes collective/fund investments where the underlying investee is a single company (as opposed to a group of different, unrelated companies).

The decision as to whether participations/IPE are in-scope for a given institution will be made in Phase 1. If participations/IPE are selected as in-scope, a revaluation of up to the top 20 (by carrying amount) will be carried out by a third-party valuer or the NCA. The exact revaluation methodology is left as a decision for the NCA bank team; however the following general principals will be followed:

- The use of equity method is permissible in cases where the bank's stake in the investee company is between 20–50%[73], and the entity-level coordinator can verify evidence of the

[73] Note that under IAS 28 it is possible to be judged to have significant influence outside of this range of ownership.

bank having *significant influence.* Significant influence is defined as at least one or more of the influence factors listed under IAS 28(2011[74]);

- Representation on the board of directors or equivalent governing body of the investee;
- Participation in the policy-making process;
- Material transactions between the investor and the investee;
- Interchange of managerial personnel;
- Provision of essential technical information.

- With the exception of assets valued under the equity method (which can be excluded from further review once the appropriateness of that approach is determined), a fair value approach should be taken. Where applied this must be consistent with the principals described in IFRS 13;
- Whenever valuation of participation depends on collateral value, valuation should be consistent with Chapter 5;
- Assets should typically be valued based on a comparables-based approach;
- If, instead, a DCF based approach is used, then parameters used in the DCF should be market consistent. In particular growth rates, discount rates and terminal value assumptions should be consistent with similar asset valuations. To ensure the DCF calculation is not overly optimistic, a benchmarking of the valuation on a multiples basis should be performed;
- Revaluations **must not** be based on cost-based approaches unless the investment was made in the last 6 months.

If the valuer's fair valuation is lower than the bank's original booked value (net of any AFS reserves), then the NCA should understand the reasons for the difference. Where no valid reason can be found to support the bank's valuation over the NCA bank team's, the carrying value of the portfolio will be adjusted to match the NCA bank team value or an appropriate reserve taken. The valuation adjustment should be entered into the AQR-adjusted CET1% template as described in the later section.

If the average change in value across the sample is a decline of 10% or more, the remaining un-sampled held participations/IPE must also be re-valued using the same approach following completion of the CA. This second set of revaluations must be completed by October 2015 and the results submitted to the NCA and the SSM.

[74] IAS28.5-9

8.2.5 OUTPUTS

The following outputs will need to be produced for this workblock:

Table 66 Outputs for level 3 revaluation of non-derivative assets

Workblock	Output
8. Level 3 fair value exposures review	• Complete T8A. Revaluation of non-derivative level 3 assets findings template • O8D PowerPoint presentation describing any remedial action the bank should take as a result of the revaluation of non-derivative level 3 assets

8.3 ELEMENT 2: CORE PROCESSES REVIEW

The following sub-sections describe the approach to the core processes review which will provide a qualitative assessment of the efficacy and appropriateness of processes used to estimate fair value for all trading book positions. This review should be carried out by an NCA bank team with expertise in capital markets, and in particular with expertise in the processes within a bank that are related to the valuation of trading book positions (and any reserves).

***Note** that if a bank was not selected for the trading book review, the NCA bank team will not be required to perform a core processes review, and the remainder of this section is not relevant for that bank[75]. Furthermore, any bank in scope for the trading book review with less than €10 BN held for trading assets as of 31 December 2013 will be exempt.*

For the avoidance of doubt: the core processes review is to be performed at the group level.

8.3.1 SUMMARY OF APPROACH

The core processes review will involve a qualitative evaluation of the effectiveness and appropriateness of key processes used in the calculation and monitoring of fair value of trading book positions (including any related fair value adjustments). The review will cover six processes (see Section 8.3.5) expected to be carried out by the bank in order to calculate and monitor fair value of the trading book, and where sub-standard practice could lead to material misstatement of the fair value of these positions on the balance sheet. The processes are:

- Pricing model validation and monitoring process;
- Credit valuation adjustment (CVA) calculation process;

[75] Note that all banks included in the trading book review will be required to complete the Core processes review which will include an assessment of the pricing model validation and product approval processes.

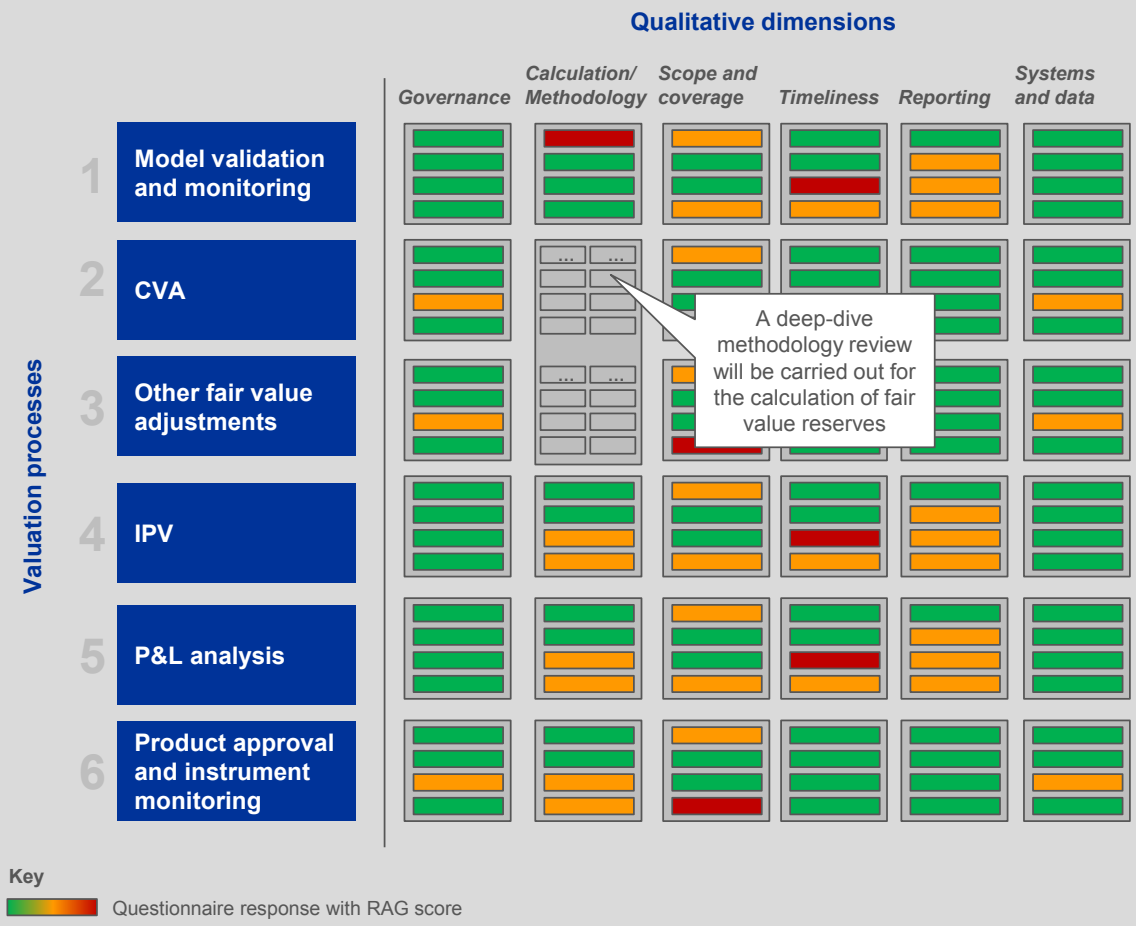
- Process to calculate other fair value adjustments; (e.g. model risk, close-out costs, etc.);
- Independent price verification (IPV) process;
- P&L analysis process ("P&L explain");
- New product approval process.

Each process will be assessed objectively across a consistent set of dimensions (see Section 8.3.4). The dimensions are:

- Governance;
- Calculation and methodology;
- Scope and coverage;
- Timeliness;
- Reporting and actions; and
- Systems and data.

For each process, a prescribed set of questions will be answered by the NCA bank team as part of the detailed review, including an initial "self-assessment" carried out by the Bank itself. The response for each question will be one of "Red", "Amber" or "Green" depending on the Bank's sophistication, compared against ECB Thresholds and accounting standards (see Section 8.3.6), based on supporting evidence provided by the Bank. Banks will score "Green" if they meet the ECB Threshold, "Amber" if they do not meet the ECB Threshold but do meet accounting standards and "Red" if they do not meet accounting standards. The outcomes of each of these detailed process reviews will be compiled into a consolidated bank-level report outlining any mandatory remediation actions required, along with expected timelines for remediation (See Section 8.3.7). A data request will also be populated during the review, where this request will be used by the CPMO to benchmark key indicators related to the valuation processes (see section 8.3.8). An illustrative view of the overall review outcome is provided in the Figure below.

Figure 42 Core processes review illustration



The remainder of this section provides further details on the review itself, and is structured as:

- Indicative timeline
- Qualitative assessment framework dimensions;
- Description of processes for review;
- Objective scoring against market and accounting standards;
- Remedial actions based on review findings;
- Benchmarking data requirements during the core review;
- Outputs.

These are described in turn below.

8.3.2 INDICATIVE TIMELINE

Table 67 Indicative timeline for core processes review

Task	Indicative date[76]
Commence reviews (with a self-assessment phase of length chosen by the NCA)	10 March 2014
Receive final results	**16 May 2014**

8.3.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 68 Illustrative models, parameter sheets and templates for the core processes review

Template	Summary of contents	Frequency of submission to CPMO
T8B. Core trading book processes review findings template	• Template containing questionnaire for core process review • Includes codified definitions for Red Amber Green assessment of each element of the review	Once complete

8.3.4 QUALITATIVE ASSESSMENT FRAMEWORK DIMENSIONS

A consistent set of dimensions will be used across all processes to ensure the review is comprehensive. The dimensions are listed in Table 69 below.

[76] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones

Table 69 Qualitative framework dimensions		
	Dimension	**Description**
A.	Governance	Suitability of reporting lines, roles and responsibilities, policies, committees, team suitability, documentation
B.	Calculation and Methodology	Robustness of calculations and methodology Key assumptions and limitations
C.	Scope and coverage	Coverage of any calculations across the portfolio
D.	Timeliness	Timeliness and regularity of calculations, reviews and reports
E.	Reporting and actions	Demonstrable actions when required based on transparent, relevant reporting and appropriate escalation channels
F.	Systems and data	Data feeds, number of manual processes/excel spread-sheets, systems

8.3.5 PROCESSES

The processes that will be covered as part of the core processes review are:

- Pricing model validation and monitoring process;
- Credit valuation adjustment (CVA) calculation process;
- Process to calculate other fair value adjustments; (e.g. Model risk, close-out costs, etc.);
- Independent Price Verification (IPV) process;
- P&L analysis process ("P&L explain");
- New product approval process.

These are discussed in the following sections.

vi Pricing model validation and monitoring[77]

The pricing model validation[78] and monitoring process is the process by which the bank independently ensures the robustness and suitability of valuation methodologies for each product. It is included in this review as any deficiencies in a bank's execution of this process would clearly suggest that the bank may be valuing its trading book positions with unsuitable models, which would lead directly to fair value misstatement. Note that the review is of both the initial model validation, and on-going monitoring of models. Each dimension of the qualitative review (see Section 8.3.4) is detailed in the table below.

[77] CRR Article 105 paragraph 7

[78] This is a review of the overall process by which the bank assess models, individual models will also be investigated as part of the Derivative pricing model review (see Section 8.4)

Table 70	Pricing model validation and monitoring process review	
	Dimension	**Area for investigation**
A.	Governance	• Reporting lines and independence; • Committees and challenge in the validation process; • Policies and procedures; • Role of Internal Audit; • Documentation of current validations (including any instances of multiple models for the same product); • Documentation of model risk framework and validation approach; • Resourcing of team.
B.	Calculation and Methodology	• High level coverage of sources of price uncertainty; • Robustness of validation framework methodology (covering data quality, modelling assumptions, parameter calibration and stressing, consideration of expected model use, recommendations to hold a model reserve); • Robustness of on-going validation framework to measure materiality and pricing uncertainty of models given change in portfolio mix and market developments, (including criteria to recommend revalidation).
C.	Scope and coverage	• Initial validation coverage across products; • On-going monitoring coverage across models and product variants; • Treatment of vended models and any legacy models.
D.	Timeliness	• Regularity of model reviews as part of on-going monitoring; • Timeliness of extraordinary reviews (e.g. when there is a significant change to the market/portfolio); • Controls on trading prior to model validation; • Time between identification of issues and re-validation/remedial actions as applicable.
E.	Reporting and actions	• Clarity and relevance of validation reports; • Board and senior management reporting; • Translation identified model weaknesses into tangible (remedial) actions.
F.	Systems and data	• Suitability of applicable data and systems.

vii Credit valuation adjustment (CVA) calculation[79]

The CVA calculation process is the process by which the Bank calculates its fair value adjustment to take into account the credit risk of derivative counterparties. This process is included in the review as incorrect calculation clearly leads directly to misstatement of trading book value. Each dimension of the qualitative review is detailed in Table 71 below. Note, the CVA review includes a review of the methodology, split across three sub-dimensions, namely:

i. Calculation approach;

ii. Parameter estimation and calibration;

iii. Parameter stressing and other modelling requirements.

[79] IFRS 13.56, CRR Article 105 paragraph 10

Note that for all significant banks in-scope for the AQR (i.e. not just the banks selected for the level 3 fair value exposures review) a CVA review will be performed, as part of the PP&A Review (see Section 1.4.7). This review will ascertain whether the Bank performs any type of CVA calculation (as is required by IFRS 13) for its derivative portfolio - any issues identified as part of the PP&A review will lead to a quantitative impact on the AQR-adjusted CET1%. Additionally, wherever issues are identified in the CVA component of the Core Processes Review this may also lead to an impact on the AQR-adjusted CET1% (to the extent this has not already been captured in the PP&A review of Section 1.4.7) .

Table 71 CVA calculation process review		
	Dimension	**Areas for investigation**
A.	Governance	• Reporting lines; • Policies and procedures; • Documentation of calculation.
B.	Calculation and Methodology *(i. Calculation approach)*	• Calculation components (e.g. CVA, DVA, etc.); • Overall calculation approach (e.g. data sources, and exposure calculation methodology).
	Calculation and Methodology *(ii. Parameter estimation and calibration)*	• Data sources used (e.g. implied PDs from CDS when liquid CDS exists, use of proxies when no liquid CDS exists); • Parameterisation of LGDs and justification of assumptions; • Exposure calculation methodology (e.g. simulation approach, correlations, market implied vs. historical, pricing models used); • Collateral and other risk mitigants (e.g. margin period of risk assumptions, collateral haircuts, incorporation of CSA features).
	Calculation and Methodology *(iii. Parameter stressing and other modelling considerations)*	• Wrong Way Risk incorporation; • Stress testing incorporation.
C.	Scope and coverage	• Coverage of product types (e.g. treatment of exotics); • Coverage by contract (e.g. inclusion of collateralised positions); • Coverage of counterparties (e.g. inclusion of central counterparties (CCPs) and sovereigns).
D.	Timeliness	• Frequency of calculation and recalibration;
E.	Reporting and actions	• Relevance of reporting.
F.	Systems and data	• Mitigation strategy for data issues; • Suitability of systems/data feeds used for CVA calculation (either vended or in-house).

viii Processes to calculate other fair value adjustments[80]

The processes to calculate other fair value adjustments (i.e. adjustments in addition to CVA) are those processes required by the Bank to calculate adjustments when the assumptions or data used in the calculation of fair value do not properly account for one or more of the following factors:

- Model risk (including parameter uncertainty);
- Illiquidity and concentration risk;
- Close out costs;

[80] IFRS 13, CRR Article 105 paragraph 9-13

- Operational risks;
- Model risk and parameter uncertainty;
- Investing and Investing and funding costs;
- Day 1 P&L;
- Other operational and administrative costs.

These processes are included in the review as issues identified could directly lead to incorrect evaluation of fair value adjustments and therefore trading book value. Each dimension of the qualitative review (see Section 8.3.4) is detailed in the table below.

Table 72 Other fair value adjustment calculation processes review

	Dimension	Areas for investigation
A.	Governance	• Reporting lines and independence; • Policies and procedures; • Documentation of calculations.
B.	Calculation and Methodology	• High level coverage of fair-value adjustments; • Robustness of calculation for each type of adjustment[81].
C.	Scope and coverage	• Coverage of products and positions in the portfolio; • Coverage of large exposures (e.g. treatment of concentrated positions); • Coverage of models and unobservable parameters.
D.	Timeliness	• Regularity of re-marking adjustments or calculation assumptions; • Regularity of methodology review.
E.	Reporting and actions	• Accuracy of reporting.
F.	Systems and data	• Accuracy/correctness of key data feeds.

ix Independent Price Verification (IPV) process[82]

The IPV process is the process by which the Bank verifies prices or valuation inputs for financial reporting of the fair value positions. This process is included in the review as issues identified could directly lead to misstatement of trading book value. Each dimension of the qualitative review (see Section 8.3.4) is detailed in the table below.

[81] Note that model risk will be investigated in detail as part of the Pricing Model Review for the most "risky" models

[82] CRR Article 105 paragraph 8

Table 73 IPV process review		
	Dimension	**Areas for investigation**
A.	Governance	• Reporting lines and independence; • Policies and procedures; • Escalation channels.
B.	Calculation and Methodology	• Collection of independent prices and quotes and the hierarchy of sources, including use of proxies and age of marks used; • Cleaning, storage and mapping of independent marks to trades/models; • Revaluation of fair values and fair value adjustments using independent data; • Thresholds for escalation; • Process for disputing discrepancies.
C.	Scope and coverage	• Coverage of positions in the portfolio; • Coverage of fair value adjustments; • Coverage of model inputs.
D.	Timeliness	• Regularity of IPV process; Timeliness of IPV reports; • Timeliness of escalation and adjustments.
E.	Reporting and actions	• Impact of IPV findings on-balance sheet valuations; • Reporting of adjustments to P&L and reserves and suitability of aggregation levels; • Actions to understand IPV discrepancies ; • Escalation of discrepancies above threshold or due to persistent mismarking.
F.	Systems and data	• Suitability of systems/data feeds used.

x P&L analysis process[83]

The P&L analysis process is the process by which the Bank allocates Trading Book P&L to the effects of underlying risk factors on individual positions, or groups of similar positions. Although issues identified do not explicitly result in incorrect trading book value, an appropriate P&L analysis process (1) allows the Bank to identify areas where mis-marking may have a material impact on the trading book fair value, and (2) allows the Bank to identify areas where the Bank may require more conservative valuation or an increase in reserves (e.g. due to unanticipated cross effects in risk factor moves). Therefore P&L analysis has been included as part of the review, as a key second order indicator of the Bank's ability to understand and correctly evaluate the fair value of trading book positions. Each dimension of the qualitative review (see Section 8.3.4) is detailed in the Table below.

[83] CRR Article 105 paragraph 7 (g)

Table 74 P&L analysis process review		
	Dimension	**Areas for investigation**
A.	Governance	• Reporting lines and independence; • Policies and procedures; • Escalation channels.
B.	Calculation and Methodology	• Sensitivity vs. revaluation approach; • Thresholds set for escalation/action based on large unexplained P&L; • Detail of evidence required in unexplained P&L;
C.	Scope and coverage	• Coverage of portfolio (e.g. rationale for any excluded positions); • Inclusion of trade amendments or cancellations.
D.	Timeliness	• Timeliness of P&L explain results following daily P&L confirmation; • Timeliness of escalation and action following reporting.
E.	Reporting and actions	• Transparency and actionably of reporting; • Evidence of escalation and action (where applicable) when thresholds are breached.
F.	Systems and data	• Suitability of systems/data feeds used.

xi New product approval process

The New product approval process is the process by which the Bank (1) controls which types of product are approved for trading based on the Bank's valuation capabilities, and other considerations, and (2) controls the on-going circumstances under which approved products are traded. This process is included in the review because any issues identified suggest that the valuation capabilities of the Bank and the complexity of the traded products may not be aligned. Each dimension of the qualitative review (see Section 8.3.4) is detailed in Table 75 below.

Table 75	New product approval and permitted instrument monitoring process review	
	Dimension	**Areas for investigation**
A.	Governance	• Reporting lines and independence; • Policies and procedures; • Committee involvement; • Documentation of products and models, including the existence of a single, centrally approved, product list used in downstream trading mandates.
B.	Calculation and Methodology	• Overall approval framework (e.g. valuation certainty, risk/capital calculations and limits, liquidity, reputational risk, IT capabilities, IPV, etc.); • Approach to unapproved trade limits and off-system variants.
C.	Scope and coverage	• Coverage of products and business areas.
D.	Timeliness	• Timeliness of new product approval process – both regular and ad-hoc (e.g. in the case of changes to the market environment).
E.	Reporting and actions	• Involvement of senior management in new product approval process; • Reporting of outcomes to Board and other senior management.
F.	Systems and data	• Suitability of systems/data feeds used.

8.3.6 OBJECTIVE SCORING AGAINST MARKET AND ACCOUNTING STANDARDS

This section describes the way in which the NCA bank team should carry out the review in order to provide an objective representation of the bank's core valuation processes (and therefore a consistent view across banks). The Template provided to the NCA bank team to carry out the Core processes review will be structured based on the tables in the preceding Section, with one or more detailed questions per area listed. For each of these questions, the NCA bank team shall score the Bank one of "Red", "Amber" or "Green". Scores should be assigned using the following definitions:

- Red: Not meeting relevant Accounting Standards[84]
- Amber: Meeting relevant Accounting Standards, but below ECB Threshold
- Green: Meeting relevant Accounting Standards, and at or above ECB Threshold

Accounting Standard should be identified by the NCA bank team responsible for the review. The definition of the ECB Threshold will be provided for each question in the template. The definition of the ECB Threshold should be objectively compared against the Bank's practices,

[84] Either IFRS or nGAAP respectively depending on the accounting rules used by the Bank for reporting purposes

and justification (with any relevant supporting evidence[85]) should be provided by the NCA bank team as part of the review. Note that for some questions there will be no applicable Accounting Standard, and therefore the Bank will be scored either "Green" or "Amber" only, for other questions the ECB Threshold and Accounting Standard may be aligned, and therefore banks will be scored either "Green" or "Red" only.

The remainder of this section details four worked examples of the scoring approach for an IFRS bank:

Worked example 1: CVA PD calibration

Question: *How does the Bank calculate PDs/credit curves for counterparties with a liquid CDS?*

ECB Threshold response: *Market implied PD.*

Example steps taken by the NCA bank team:

1. NCA Bank Team checks applicable accounting standards and finds that the ECB Threshold coincides with IFRS 13
2. NCA Bank Team reviews CVA calculation methodology documentation and discovers PD calibration is done using historical data for some cases where the NCA Bank Team expects a liquid CDS would be available;
3. NCA Bank Team verifies this with supplementary analysis;
4. NCA Bank Team populates template as "Red" and adds rationale for this response, highlighting the sources used and appending the supporting analysis (this would then feed into to the use of the CVA challenger model comparison to the extent this issue was not identified during PP&A).

Worked example 2: IPV reporting line

Question: *What is the reporting line of the IPV team?*

ECB Threshold response: *Reporting line to Finance and independent of risk takers.*

Example steps taken by the NCA bank team:

1. NCA Bank Team checks applicable accounting standards and finds no explicit reference exists in IFRS;
2. NCA Bank Team checks organization chart for bank and discovers Head of IPV reports into Finance, but also has a dotted line into a risk taking group;
3. NCA Bank Team populates template as "Amber" and adds rationale for this response highlighting the source used.

[85] Note, evidence should be available on request as required during the QA process

Worked example 3: Calculation of fair value adjustment for illiquidity

Question: *Does the Bank calculate a fair value adjustment for illiquidity?*

ECB Threshold response: *The Bank should conduct regular analysis to determine if an illiquidity adjustment is required, in particular for positions which might be susceptible to such issues (e.g. concentrated positions, one-way markets, emerging markets, etc.).*

Example steps taken by the NCA bank team:

1. NCA Bank Team checks applicable accounting standards and finds accounting standard IFRS 13 is concurrent with the ECB Threshold);
2. NCA Bank Team reviews fair value adjustment policies and procedures and any other sources available (e.g. methodology documentation), *but* does not find any evidence that the Bank considers illiquidity as a fair value adjustment for a particular class of products;
3. NCA Bank Team enters discussion with the Bank, and allows the Bank to provide any evidence, the Bank subsequently provides a memo dated 2010 in which the Bank did hold an adjustment for illiquidity, but cannot provide evidence that the adjustment is regularly analysed;
4. NCA Bank Team populates template as "Red" and adds rationale for this response, highlighting sources used.

Worked example 4: Validation of vended models

Question: *Does the Bank validate valuation models purchased from a third party?*

ECB Threshold response: *The Bank should validate and regularly assess vended models as part of their overall validation and model risk monitoring process.*

Example steps taken by the NCA bank team:

1. NCA Bank Team checks applicable accounting standards – Accounting standard IFRS 13 is concurrent with the ECB Threshold;
2. NCA Bank Team reviews validation reports for all third party models, concludes that all third party models are validated, and confirms the conclusion with the Bank;
3. NCA Bank Team reviews policies and procedures and model risk framework documentation and confirms that third party models are included in the on-going monitoring process;
4. NCA Bank Team populates template as "Green" and adds rationale for this response, highlighting sources used.

8.3.7 DETERMINING REMEDIAL ACTIONS BASED ON REVIEW FINDINGS

This section details the approach the NCA bank team should use to determine any remedial actions and their respective timelines based on the outcome of the Core processes review questionnaire results. Each area investigated will be scored "Red", "Amber" or "Green", based on an objective comparison with accounting standards and ECB Thresholds (see Section 8.3.6).

Remedial actions will be mandated for the Bank for all questions resulting in a "Red" score. The remedial action should be specified by the NCA bank team where necessary, and should be the minimum action required for the Bank to reach Accounting Standard. These should be addressed so that accounting Standards are reached as soon as possible.

Banks will be required to address "Amber" issues (i.e. mis-alignment with market standards) at the NCA's discretion.

Note, where two or more remedial actions are closely linked (e.g. relate to the same dimension of the same process), the NCA bank team should consolidate the two actions into a single recommendation if appropriate.

8.3.8 DATA REQUIREMENTS DURING THE CORE PROCESSES REVIEW

As with the PP&A review each in scope bank will be required to perform a self-assessment using the Core Processes review template. In doing so data should be provided by the bank to evidence answers on each of the six processes - these requests will be embedded within the questionnaire template. These responses may be used by the NCA bank team as evidence when populating the Template answers as "Red", "Amber" and "Green", and will also be used in the Quality Assurance process to ensure consistency across Banks and jurisdictions. The questionnaire template will undergo a field test to ascertain the feasibility of collecting specific items. Examples of the types of data that will be requested are:

- Headcounts for the team responsible for each process in the review;
- Model approvals/rejections data;
- Counterparty exposure profile by maturity and counterparty rating;
- Fair value adjustments by category;
- IPV exceptions report;
- P&L explain report;
- Product approvals/rejections data.

8.3.9 OUTPUTS

The following output will need to be produced for this workblock:

Table 76 Outputs for core processes review	
Workblock	**Output**
8. Level 3 fair value exposures review	• Complete T8B. Core trading book processes review questionnaire template • O8D PowerPoint presentation describing any remedial action the bank should take as a result of core trading book processes review

8.4 ELEMENT 3: DERIVATIVE PRICING MODEL REVIEW

The following sub-sections describe the approach for the Derivative pricing model review, which will assess the robustness of the most material pricing models used to value level 3 derivatives. This component of the review should be carried out by an NCA bank team with expertise in derivative pricing (in particular the pricing of exotic products) and the calculation of suitable reserves (or other mitigating action) where there are known deficiencies, limitations or significant unobservable parameters associated with a given valuation technique.

***Note** that if a Bank has immaterial level 3 derivative[86] exposure as identified during Phase 1, the NCA bank team will not be required to perform a Pricing model review for the Bank, and the remainder of this section is not relevant for the Bank.*

8.4.1 SUMMARY OF APPROACH

The Derivative pricing model review component will focus on pricing models used by the Bank to price complex derivatives where valuation depends on unobservable model parameters (for those positions not covered by the revaluation review detailed in Section 8.2) – these derivatives are known as level 3 exposures. A set of models for review will have been selected as part of the "Portfolio/Model Selection" during Phase 1. The selection will have identified models with the largest level 3 exposure, and those most likely to give rise to model risk. The review will assess models across four dimensions, namely:

- **Model use**, the appropriateness of the model given the nature of the products being valued and use of model outputs;
- **Model assumptions**, the appropriateness and limitations of any modelling assumptions, techniques and product simplifications used;
- **Input data**; the appropriateness and integrity of any input data used;
- **Model calibration**; the appropriateness of calibrated model parameter values and methodology used.

[86] Securitisations in the correlation trading portfolio should be included in the pricing model review.

For each dimension, a set of questions will be answered by the NCA bank team as part of a detailed review. The response for each question will be one of "High", "Medium" or "Low" risk[87], and will be reflect the robustness of the model's valuation with respect to each question (see Section 8.4.4). Wherever an issue is identified, (denoted by a "Medium" or "High" response), the NCA bank team shall quantify (where feasible) the issue using available means for incorporation into the AQR-adjusted CET1% calculation (see Section 8.4.6). Additional mandatory remedial actions shall also be imposed as necessary. These outcomes will be compiled into a model report, along with expected timelines (see Section 8.4.7).

The NCA bank team will select the models based on the outcome of Phase 1. The number of models expected to be in scope for each bank is 5-10, though some banks may have very few/none and the very largest and most sophisticated banks could have more than 10 (where resources allow). The NCA bank team should then complete the initial questionnaire to identify issues, and prioritise the quantification of issues based on expected materiality based on the initial assessment. Note, the CPMO acknowledges that within the industry the concept of an individual pricing model is not well defined. Or, similarly, there is no standard way of defining when during the process of modifying a model, such modifications result in a "different" model.

However, the remainder of this document refers to "pricing models" under the assumption that the NCA, NCA bank team and Bank are able to partition the valuation techniques used by the Bank into a set of distinct pricing models submitted in the Phase 1 trading book template. This should be done using expert judgement of the NCA bank team and Bank in line with the guidelines provided during data collection.

The remainder of this section is structured as:

- Indicative Timeline
- Assessment framework dimensions;
- Objective scoring for each dimension;
- Quantification of adjustments;
- Remedial actions based on review findings;
- Outputs.

These are discussed below.

[87] Risk here refers to risk of the model producing an incorrect valuation.

8.4.2 INDICATIVE TIMELINE

Table 77 Indicative timeline for the derivative pricing model review

Task	Indicative date[88]
Commence review	7 March 2014
Receive triaging results	18 April 2014
Receive final results	**4 July 2014**

8.4.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 78 Illustrative models, parameter sheets and templates for the derivative pricing model review

Template	Summary of contents	Frequency of submission to CPMO
T8C. Level 3 derivative pricing model review findings template	• Template containing questionnaire for derivative pricing model • Includes codified definitions for High Medium Low assessment of each element of the review	Interim update provided once questionnaire is complete, then once complete

8.4.4 ASSESSMENT FRAMEWORK DIMENSIONS

A consistent set of areas will be assessed for each pricing model across the four dimensions of the review. The areas are detailed in Table 79 below.

[88] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones

Table 79 Derivative pricing model review		
	Dimension	**Area for investigation**
1.	Model use	• Range of products priced by model; • Hedging strategies or portfolio decisions made based on model outputs; • P&L explain process and exceptions.
2.	Model assumptions	• Number and type of model components (Stochastic differential equation, static distribution, parameterisation, etc.); • Number of stochastic variables and complexity of modelled behaviour (distribution, mean reversion, drift, jumps etc.); • Model solution (e.g. closed form solution, numerical method, Monte Carlo) and any techniques (e.g. accelerated Monte Carlo methods).
3.	Input data[89]	• Similarity of market data to required instruments and use of proxies; • Interpolation/extrapolation; • Bid/Ask, depth of market and other illiquidity considerations; • Frequency of remarking and availability of marks.
4.	Model calibration	• Degrees of freedom and global/local considerations; • Calibration fit and number of different possible calibrations that give a good fit; • Economic intuition of parameter values; • Sensitivity to parameters; • Frequency of recalibration.

8.4.5 OBJECTIVE SCORING FOR EACH CRITERION

This section describes the way in which the NCA bank team should carry out the review; in order to provide an objective representation of the robustness of valuation for each model respectively (and therefore a consistent view across models and banks). The Pricing Model Template provided to the NCA bank team to carry out the review will be structured based on the table in Section 8.4.4 above. For each question, the NCA bank team shall score the Bank one of "High", "Medium" or "Low". These scores should be assigned using the following definitions:

- High: Adjustment necessary but either no mitigation already exists, or mitigation does not materially address the issue;
- Medium: Adjustment necessary but mitigation already exists that materiality reduces the issue;
- Low: No adjustment necessary.

Mitigation could relate to either the Bank's current fair value reserves and/or any conservative marking (e.g. writing off optionality, reserving P&L gains, implicit modelling simplifications, etc.). Objective criteria will be provided in the template for consideration by the NCA bank team in order to score the model High, Medium or Low. Justification (with any relevant

[89] Includes calibration input data.

supporting evidence) should be also provided by the NCA bank team as part of the review within the template. The NCA bank team has several sources of information available to use during the review:

- Self-assessment carried out by the bank to identify model weaknesses.
- Interviews with model users and developers in the Bank, who will be able to direct the NCA bank team to specific pieces of documentation or analysis to use as evidence for answers;
- Model documentation and validation reports;

Any analysis (regular or ad-hoc) performed by the bank regarding positions valued by the model.

Several examples are outlined below:

Worked example 1: Independent price verification results

Question: *Have any issues been identified during the IPV process over the last 12 months?*

Guidance: *All products should be included in the IPV process, all material discrepancies should be reserved, including those arising from consensus price service rejections or collateral margining disputes.*

Example steps taken by the NCA bank team:

1. NCA Bank Team reviews IPV results for last 12 months for products priced by model, identifying whether the scope is appropriate, but that there have been several recent occurrences of marks being rejected from a consensus pricing service.
2. The NCA Bank Team is not able to identify a reserve for this issue, and the Bank confirms that no reserve or other mitigating action exists for this issue;
3. NCA Bank Team populates template as “High” and adds rationale for this response, highlighting sources used.

Worked Example 2: Use of extrapolation

Question: *Is suitable analysis performed to understand sensitivity to extrapolation used?*

Guidance: *The bank should perform regular analysis to understand the sensitivity to any extrapolation assumptions under a range of scenarios (both to input data, and within the model calculation), including the strength of evidence from market data and possible alternative techniques*

Example steps taken by the NCA bank team:

1. NCA Bank Team identifies that the Bank is not currently required to perform extrapolation of observable data points given current market conditions and data availability;
2. NCA Bank Team therefore populates template as "Low" and adds rationale for this response, highlighting sources used.

Worked example 3: Accelerated Monte Carlo technique

Question: *Has the bank conducted analysis to understand the impact of the solution approach, including bias and variance?*

Guidance: *The bank should perform regular analysis to understand the impact of the choice of solution approach, including through the use of special case analytical solutions (where applicable), and comparing with alternative approaches e.g. larger number of unbiased Monte Carlo scenarios.*

Example steps taken by the NCA bank team:

6. NCA Bank Team reviews model documentation of Monte Carlo pricing model, and discovers that the daily model run uses a reduced simulation to lower run time;
7. A model reserve is held for the model, but the rationale is not clearly specified, the NCA Bank Team questions the Bank on how the reserve is calculated, and the Bank provides evidence explaining that the full calculation is run monthly, and on the full run date the difference between full and reduced calculation is calculated and included as a component of the overall model reserve;
8. NCA Bank Team populates template as "Medium" and adds rationale for this response, highlighting sources used.

Worked Example 4: Calibration of unobservable parameters

Question: *Are unobservable parameter values supported by economic rationale?*

Guidance: *The bank should be able to justify the choice of parameter value, and a range of possible, plausible, values.*

Example steps taken by the NCA bank team:

9. NCA Bank Team reviews existing parameter values and notes that they requires assumptions that are not data driven, and lack economic intuition, lead to a particular choice;
10. The Bank is unable to provide evidence of any mitigating action or consideration of alternative values and the impact this would have on valuation;
11. NCA Bank Team populates template as "High" and adds rationale for this response, highlighting sources used.

8.4.6 QUANTIFICATION OF ADJUSTMENTS

This section describes the approaches the NCA bank team has available to calculate quantitative adjustments for issues identified as part of the assessment detailed in Sections 8.4.4 and 8.4.5. However, there is no single consistent methodology available to the NCA bank team that can be used for all issues identified. At a high level, 3 approaches are possible:

- Have the bank perform ad-hoc calculations using existing models to calculate the impact directly, e.g. remarking of parameters or adjustments to other model settings;
- Have a third party develop a model to price the relevant exposures (or a sample of the exposures);
- Have one or more other banks offer prices on samples of exposures to determine adjustments.

All valuations should ensure they account for the following factors:

Table 80 Fair value adjustments		
Adjustment	**Description**	**In IFRS 13?**
Close out/bid-offer	Adjustment to account for difference between mid-market and relevant bid/offer price	Yes
Model risk	Adjustment needed due to known limitations in a model or its usage – derived from comparison with other models	Yes
Parameter uncertainty	Uncertainty adjustments when some parameters are not observable in the market	Yes
Liquidity valuation adjustment	Adjustments needed due to the uncertainty over the ability to transact at observed market levels	Yes
Future funding and investing cost	Adjustments made where it is appropriate to value the long-term funding implications of a transaction	Yes

Examples are listed below. The CPMO appreciates that these are stylised examples and not necessarily reflective of the complexities that may be identified, and are provided for guidance only. When an issue identified is not similar to the examples, the NCA bank team should use all available means, including the NCA bank team's own expert judgment and experience, to devise an approach to quantifying the issue where possible.

Each example presented below is a simplified description of an issue that may exist with a pricing model valuation, and which may be identified during population of the derivative pricing model template. The examples contain a brief description of the issue, and one or more example approaches of how an independent and external party (the NCA bank team) may attempt to quantify a reserve or mitigate the issue. The approaches to mitigation themselves are also stylised.

The mitigation approaches described below may be already in use by the bank (for Amber issues), or may not be appropriate for a particular similar issue that is identified during the review, especially given the stylised and brief nature of these examples. The NCA bank team should apply their own expert judgement in all cases when determining a specific mitigation approach, and should use the below strictly in the spirit they are written in as described in this section. Moreover, in some examples, multiple stylised mitigation approaches are described. In these cases, the NCA bank team should use expert judgement to determine whether any of the example mitigation approaches are appropriate. To the extent that more than approach one is deemed appropriate, the NCA bank team should then choose the most suitable, based on an appropriate level of prudence, and ease of implementation.

Worked Example 1: Product coverage

Issue: *Model was originally used by the Bank for a set of products, but model now also prices similar illiquid products for which the NCA bank team believes the model assumptions may not be appropriate for additional features. (e.g. when introducing illiquid long dated equity options which are dependent on equity/interest rate correlation)*

Example mitigation 1:

- The Bank revalues positions with model which captures the features of the illiquid product;
- The difference between new valuation and current valuation should be reserved.

Example mitigation 2:

- The Bank may look for examples when the illiquid product has traded and quantify the model pricing error;
- The bank should then apply any observed discrepancy to the current positions and reserve the resulting amount.

Example mitigation 3:

- The NCA Bank Team requests that the bank has a sample of exposures revalued by a capable third party (either bank or other third party).

Worked Example 2: Use of extrapolation

Issue: *Model inputs require the extrapolation of observable data to illiquid maturities/strikes for which no observable data is available. (e.g. long dated interest rate swap rates or far out of the money implied volatilities)*

Example mitigation 1:

- The Bank looks for examples of when the longest dated marks are available to determine if the extrapolation technique would have been appropriate for the observable data, calculating any observed error;
- The observed error of the extrapolation technique across observable data applied to the current position could then be reserved.

Example mitigation 2:

- The NCA Bank Team or Bank determines (e.g. using any available historical data observed for long dated trades) a set of possible extrapolation techniques which fit observed data (assuming that there is no economic reason to suspect the observed relationships may breakdown);
- The Bank should value applicable positions using each extrapolation technique, and reserve the difference between the chosen technique's valuation and the lowest valuation of all techniques.

Worked Example 3: Accelerated Monte Carlo technique

Issue: *The daily running of a Monte Carlo valuation model uses a small number of scenarios (known to demonstrate limited stability), to reduce computational burden, with the full simulation run only periodically.*

Example mitigation:

- The Bank runs the full simulation to determine the error of the reduced method;
- This error is reserved;

Worked Example 4: Calibration of unobservable parameters

Issue: *The calibration used is one of several "good fits" selected based on trader intuition, and is based on liquid strikes, where the Bank also trades other illiquid strikes.*

Example mitigation 1:

- The Bank identifies the parameters lacking intuition and stresses them to reasonable values;
- The impact on valuation is calculated and reserved.

Example mitigation 2:

- The Bank determines a representative set of possible "good fit" calibrations;
- The Bank's current position should be valued using each calibration, and the difference between the chosen calibration valuation and the lowest valuation of all calibrations used should be reserved.

Worked Example 5: Distribution choice for stochastic variable

Issue: *The pricing model assumes a distribution for one of the model inputs that the NCA bank team believes to underestimate kurtosis.*

Example mitigation 1:

- The positions should be re-priced with an alternative model (either bank or third party) that allows for fatter tails (e.g. an appropriately parameterised jump diffusion or stochastic volatility model);
- The difference between new valuation and current valuation should be reserved.

Example mitigation 2:

- The historical distribution should be determined, and the distribution parameters used in the model should be re-calibrated using an appropriate tail percentile of the observed distribution;
- The difference between new valuation and current valuation should be reserved.

Worked Example 6: Model choices

Issue: *The model used is one of several models currently used in the market for a particular product, where the bank's model is either used less frequently or considered to be less able to describe observed behaviours of the applicable underlying.*

Example mitigation:

- The applicable positions should be revalued for as many of the models within this suitable portfolio of models as possible, potentially by a third party;
- The difference between the chosen model valuation and the lowest valuation of all models tested should be reserved.

Worked Example 7: Unobservable parameter

Issue: *An unobservable parameter is required to price an exotic product.*

Example mitigation 1:

- Realistic values of the unobservable parameter are determined (using any market implied or historical data and economic intuition where possible);
- Applicable positions should be re-priced for each parameter value, and the difference between the current valuation and lowest valuation of all parameter choices should be reserved.

Example mitigation 2:

- When optionality is "long optionality only" and when using a simplified more liquid product is globally conservative (e.g. Bermudan vs. European), the difference between the model valuation and equivalent simplified option with same underlying can be reserved.

Example mitigation 3:

- When the unobservable parameter has no economic basis by which a plausible set of values can be determined, an alternative model may be used (likely including globally conservative simplifications of the product) which does not rely on such a parameter;

The difference between the chosen model valuation and the new valuation is reserved.

Worked Example 8: Model assumptions

Issue: *There are one or more model assumptions (in general) which are identified by the NCA bank team as simplified vs. models used widely in the market.*

Example mitigation 1:

- When traded optionality can be simplified to a globally conservative liquid product (e.g. Bermudan vs. European, or digital vs. call spread), the difference between the model valuation and equivalent simplified option with same underlying can be reserved.

Example mitigation 2:

- The PV of the pay-offs of applicable trades may be determined for stressed values of the underlying, and the difference between the worst case and the current valuation should be reserved;

Example mitigation 4:

- The NCA Bank Team requests that the bank has a sample of exposures revalued by a capable third party (either bank or other third party).

8.4.7 DETERMINING REMEDIAL ACTIONS BASED ON REVIEW FINDINGS

The reserve calculations should be complemented with any necessary remedial action identified by the NCA bank team. The remedial action should be the minimum action required by the Bank to mitigate any issues identified (including the setting up the calculation and holding of a model reserve), and any other actions required to obtain IFRS[90] and CRR[91] compliance. Where two or more remedial actions that are closely linked (e.g. relate to the same dimension of the same process), they should be consolidated into a single template if appropriate. Remedial actions should be completed by 31/12/2015.

8.4.8 OUTPUTS

The overall objective of the workblock is twofold:

- To determine any remedial actions required by the banks around level 3 fair valuations or related processes and policies, in relation to three different areas (depending on materiality);
  - Level 3 non-derivative assets;
  - Core trading book processes;
  - Level 3 derivatives.

[90] In particular any IFRS 13 disclosures for significant Level 3 inputs required by IFRS 13.92(g), (h)
[91] In particular Article 105 paragraph 2 (a) and paragraph 13

- To quantify potential incorrect valuations for inclusion in the AQR-adjusted CET1%.

The following output will need to be produced for this workblock:

Table 81 Outputs for the derivative pricing model review

Workblock	Output
8. Level 3 fair value exposures review	• Complete T8C. Level 3 derivative pricing model review findings template • O8D PowerPoint presentation describing any remedial action the bank should take as a result of level 3 derivative pricing model review

9 DETERMINE AQR-ADJUSTED CET1% AND DEFINE REMEDIATION ACTIVITIES FOR BANKS FOLLOWING THE COMPREHENSIVE ASSESSMENT

This chapter explains the approach to reflecting findings from the AQR in a way that achieves the objectives of the AQR while being feasible for an NCA to implement. Following the summary of the approach, the chapter describes how findings from the AQR should influence banks' future reporting. It then describes the key aspects that NCAs must ensure banks have captured in their reported CET1% to fully incorporate all aspects of CRR/CRD IV. Next, it explains how the AQR findings should be used to adjust the bank's reported CET1% to create an "AQR-adjusted CET1%'" for use as an input to the stress test. Finally, it looks at the implications of the AQR for banks' accounts at the next relevant reporting date.

For the avoidance of doubt, by definition, only those AQR findings that will be included in bank accounts will be reflected in Pillar 1 capital requirements. Findings from the AQR that are not included in bank accounts will therefore be reflected in Pillar 2 capital requirements.

9.1 SUMMARY OF THE APPROACH

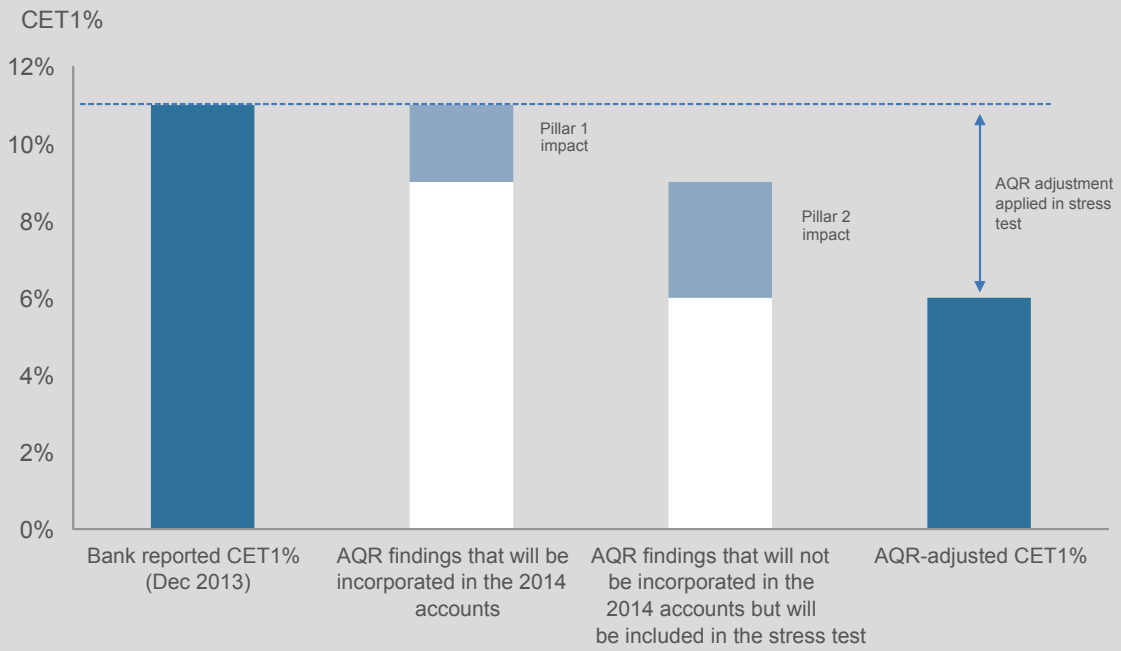
- **No change in the 2013 certified accounts of banks will be required following the AQR** (except in the unlikely event the AQR highlights issues that should lead to restatement according to local law e.g. identification of accounting irregularities)[92].
- Certain findings from the AQR should be expected to be reflected in bank's accounts in the relevant accounting period in 2014 following the AQR. These may include:
  - Corrections to specific provisions for individually impaired credit facilities that were sampled in the file review;
  - Corrections to specific provisions for collectively impaired credit facilities, where the bank's collective provisioning model is viewed by the NCA Bank team as missing crucial aspects required in accounting rules (e.g.. discounting based on EIR);
  - Creation of a credit valuation adjustment (CVA) for derivatives.
- Other findings from the AQR will not be included in 2014 accounts, as they are not compliant with accounting rules (e.g. they do not relate to-incurred losses) and as such NCAs will not be in the position to require banks to accept them. For instance:

[92] IAS8 applies for IFRS banks

- The extrapolation of findings from sampled files to the wider portfolio;
- There is no prescription in the accounting rules around emergence period for IBNR/general provisions. Even if banks do not produce objective evidence for their choice of emergence period, they still may not be required to use a more conservative emergence period;
- Banks may reject third party or NCA valuations of level 3 securities.

- In order to correctly account for all incurred losses, an "AQR-adjusted CET1%" will be calculated for each bank. This AQR-adjusted CET1% will be used to compute the final stress test outcomes. **The bank would not be required to restate accounts or apply the AQR assumptions on an on-going basis, i.e. the AQR-adjusted CET1% is not a de-facto alternative accounting standard.**

Figure 43 Illustration of AQR-adjusted CET1% approach



- Note that there will be no losses in the AQR-adjusted CET1% relating to projected or sampled expected future losses (i.e. those which do not have an impairment trigger as of 31st December 2013) arising from the credit file review. Instead these expected future losses will be noted and considered for inclusion in the stress test at an appropriate reporting date

- The implication of the diagram above is that the illustrative bank reports no capital shortfall relative to the 8% minimum based on the Pillar 1 related findings of the AQR, as taking into account the incurred losses its adjusted capital ratio would be 9%. However, the bank would have a Pillar 2 impact of 3% and a capital requirement of 2%, stemming from AQR adjustments not incorporated in accounts or regulatory capital that will be applied in the first year of the stress test. Such a requirement will be applied in the ST and would have to be met by the bank in a form and timeframe to be determined by the ECB.
- If the stress test implies a further capital need in addition to the 2% implied by the AQR-adjusted CET1%, then this would need to be raised by the bank or achieved through other means over a more gradual timeframe. For example, if the stress test resulted in a reduction in CET1% of 3%, then in the example above, with a 5.5% threshold for the stress test, the bank would need to raise a further 0.5% of current RWA in capital or via other means over a period of time to be determined.
- The shape and form of disclosure of stress test findings (including AQR findings) will be discussed at a later date, though any disclosure should avoid the potential for misunderstanding around the appropriateness or otherwise of a bank's reported accounts. Timing of disclosure to banks will also be discussed at a later date, pending the finalisation of the stress test methodology, operating model and timelines.
- For the avoidance of doubt
  - By definition, only findings from AQR that will be included in bank accounts will be reflected in Pillar 1 capital requirements. Findings from the AQR that are not included in bank accounts will therefore be reflected in Pillar 2 capital requirements.
  - By definition - no adjustment will be made in the AQR-adjusted CET1% for Expected Loss for standardised portfolios as standardised portfolios do not calculate Expected Loss
  - Adjustments for not-incurred losses will ultimately be applied in the stress test as no adjustment will be required to the Bank's reported Dec 2013 CET1% (unless otherwise required under accounting rules, e.g. IAS 8 for IFRS banks).
  - The AQR adjusted CET1% aims at representing in an orderly fashion the results of the AQR and by no means defines the way in which the AQR results are to be integrated in the ST framework
  - Expected Losses identified as part of the AQR process (i.e. cases where no impairment trigger has been hit, but loss is considered more likely than not) should not be included in the AQR-adjusted CET1%

9.2 INDICATIVE TIMELINE

Table 82 Indicative timeline for the AQR-adjusted CET1% calculation

Task	Indicative date[93]
Obtain bank CET1% parameters and validate all capital requirements/deductions have been applied according to CRR/CRD IV	25 April 2014
Obtain all inputs necessary to populate template	8 July 2014
Complete population of AQR-adjusted CET1% template and submit to CPMO	**18 July 2014**
Obtain feedback from CPMO and incorporate in final report	1 August 2014

9.3 ILLUSTRATIVE MODELS, PARAMETER SHEETS AND TEMPLATES

The following illustrative models, parameter sheets and templates are relevant to this workblock:

Table 83 Illustrative models, parameter sheets and templates for the AQR-adjusted CET1% calculation

Template	Summary of contents	Frequency of submission to CPMO
T9 AQR-adjusted CET1% adjustment tool	Tool to adjust bank CET1% ratios based on results of AQR	At end of task

9.4 CHECKS ON THE BANK'S CALCULATION OF CET1%

To understand the influence of losses identified in the AQR on each bank's capital requirements the impact of the relevant findings on the bank's capital ratio must be considered. The relevant benchmark for the CA is a Common Equity Tier 1 Ratio of 8%. Therefore the impact of losses identified in the AQR on the CET1% of each bank must be assessed to arrive at an AQR-adjusted CET1%.

As a first step, it is critical that banks fully apply the specific rules in CRR/CRD IV when determining the CET1%. Some of the new rules are subtly different from Basel 3 and therefore have the potential to be misinterpreted. Specifically, the NCA's should ensure during April and May 2014 that the CET1% calculation has appropriately incorporated the following aspects:

- Only eligible capital is counted as per CRR/CRD IV
- All changes to trading book capital requirements have been reflected

[93] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones

- AVA adjustments are included consistent with CRR/CRD IV (acknowledging that EBA guidelines are not in place)
- Provisions are fully deducted from available capital
- IRB provision shortfall is deducted from available capital for IRB banks, with Article 159 of CRR applied at the aggregate exposure level
- Prudential filters have been removed as appropriate according to national regulations (with phase in)
- Adjustments made for:
  - Gains and losses on own credit risk; and
  - Cash flow hedge reserve.
- Appropriate deductions have been made (with appropriate phase in) for:
  - Holdings in financial institutions;
  - Losses, goodwill and other intangibles;
  - DTAs;
  - Defined benefit pension fund assets;
  - Own CET1 instruments;
  - Reciprocal cross holdings; and
  - Qualifying holdings outside the financial services sector, free deliveries, securitisations with 1250% risk weight.

It will be necessary for stress testing purposes to understand how the CET1% ratio would change as phase in is removed. As such it will be necessary to provide an analysis of the change in the CET1% ratio over time with different levels of phase in.

9.5 DETERMINATION OF THE AQR-ADJUSTED CET1%

Once a verified CET1% ratio for a bank is established, the CET1% ratio should be adjusted to arrive at the AQR-adjusted CET1% ratio according to the specific rules for the AQR. The AQR-adjusted CET1% will be an input to the stress test, allowing adjustments to be made to bank stress test projections if required.

The following principles will be applied to arrive at the AQR-adjusted CET1%:

- AQR-adjusted CET1% should be adjusted for deviations in estimates of provisions, reserves or level 3 valuations (both sampled and extrapolated findings);

- For the purposes of the AQR we assume the IRB provisioning shortfall does not change from the bank's current calculation given materiality and in the interests of feasibility of the exercise;
- Material offsetting impacts from increases in provisions and reserves or changes to valuations should be taken into account (e.g. tax effects when material);
- For the purposes of the AQR-adjusted CET1% RWA will not be adjusted given materiality and in the interests of feasibility of the exercise, except for the impact of change to level of protection from risk transfer transactions/securitisations etc. Of course, once adjustments to accounts are made following the completion of the CA, the associated adjustments to RWA would be expected to be made by the bank.

The following adjustments will be required to be made to the AQR-adjusted CET1%

- Adjustment for reclassification of exposures from loans and advances or hold to maturity to AFS or fair value;
- Adjustment to CVA charge;
- Adjustment to available capital for changes to provisions;
- Adjustments to valuation of level 3 Assets (or equivalent for nGAAP banks);
- Offsetting impact of risk transfer mechanisms (e.g. securitisation, portfolio guarantees) on provisions, reserves and valuation adjustments;
- Adjustments to available capital for tax effects; and
- Adjustments to RWA for changes to capital relief from portfolio guarantees/securitisations under the supervisory formula approach (IRB banks only).
- Other adjustments that may be required

A template will be provided to perform the required calculation so that results can be calculated and delivered in a standardised way. The following sub-sections step through each component of the template in a step by step way:

- Step 1 – Enter results of workblocks relating to accrual accounted assets;
- Step 2 – Enter results of workblocks relating to fair value exposures;
- Step 3 – Calculate AQR-adjusted CET1%.

Colour coding of the template is as follows:

Yellow – field to be populated based on data from banks, checked by NCAs

Green – fields to be populated following completion of AQR

Pink– calculated field

White – Sum totals

9.5.1 STEP 1 – ENTER RESULTS OF WORKBLOCKS RELATING TO ACCRUAL ACCOUNTED ASSETS

In step 1 the findings from the workblocks relating to accrual accounted assets are entered. For corporate exposures, findings observed in the Credit file sample and findings that result from projections of findings (including collective provisioning adjustments for IBNR) are entered separately for each portfolio. For retail, the findings from challenger model analysis are entered for each portfolio (if any).

Space is allowed in the template for offsetting impacts of risk protection such as from portfolio risk transfer transactions or from securitisations. Space is also allowed in the template to take into account tax effects (with scope to adjust the tax effect for different levels of CRR/CRDIV phase in.

The total net impact to provisions is summed across corporate and retail in-scope portfolios and the adjustment to capital calculated for all portfolios

Not all fields would be expected to be populated as most banks may have relatively few portfolios in scope, as illustrated in the screenshot below

Dermination of Provisions impact

		Provisioning adjustments €MM			Offsetting impact of risk protection €MM	Offsetting tax impact (after rules on limitations on DTAs)			Net impact €MM		
Corporate portfolio											
Portfolio number	Portfolio name	Adjustment to provisions on Credit File sample	Projection of Credit File findings to wider portfolio	Total	Total	Phase in period for CRR/CRD IV 2014	2015	2016	Phase in period for CRR/CRD IV 2014	2015	2016
1	Country 1 SME	100	200	300		60	60	60	240	240	240
2	Country 1 CRE	50	150	200	10	20	10	5	170	180	185
3	Country 1 LC	30	60	90					90	90	90
4				0					0	0	0
5				0					0	0	0
6				0					0	0	0
7				0					0	0	0
8				0					0	0	0
9				0					0	0	0
10				0					0	0	0
11				0					0	0	0
12				0					0	0	0
13				0					0	0	0
14				0					0	0	0
15				0					0	0	0
Total for corporate portfolio		180	410	590	10	80	70	65	500	510	515
Retail portfolio											
Portfolio number	Portfolio name			Total	Total	Phase in period for 2014	2015	2016	Phase in period for 2014	2015	2016
1	Country 1 RRE			20	0	4	4	4	16	16	16
2	Country 2 Retail other			-10	0	-3	-3	-3	-7	-7	-7
3									0	0	0
4									0	0	0
5									0	0	0
6									0	0	0
7									0	0	0
8									0	0	0
9									0	0	0
10									0	0	0
11									0	0	0
12									0	0	0
13									0	0	0
14									0	0	0
15									0	0	0
Total for Retail portfolio				10	0	1	1	1	9	9	9
Total provisioning impact											
Total adjustment to available capital									-509	-519	-524

9.5.2 STEP 2 – ENTER RESULTS OF WORKBLOCKS RELATING TO FAIR VALUE EXPOSURES

In the section on fair value exposures, three types of adjustments are required (where relevant):

- Reclassifications of accrual accounted assets to fair value
- Adjustment to the CVA charge based on CVA review and the challenger model (note – no adjustment is made to DVA given adjustment is a capital adjustment and DVA is deducted from capital)
- Revaluation of level 3 fair-valued exposures

An adjustment is entered for all assets as per the 2014 CRR/CRD IV phase in. For AFS portfolios the total adjustment for some sub-segments may need to be provided with different levels of phase in of removal of AFS filters.

Parameters may also need to be entered for the offsetting impact of risk protection e.g. from portfolio guarantees.

Parameters may also need to be entered at NCA discretion to take into account tax effects from movements in valuations as appropriate given local tax rules. Scope is provided to reduce impact of tax effects following phase in of rules on DTA.

Figure 44 Impact from fair valued exposures[94]

Calculation of overall impact on Available Capital of findings from the AQR

	Total capital adjustment before impact of risk protection and tax			Offsetting impact of risk protection			Offsetting tax impact (after rules on limitations on DTAs)			Net impact		
Phase in period for CRR/CRD IV deductions	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Reclassification of loans and advances and held to maturity as AFS or fair value												
Reclassification to AFS	-2	-2.2	-2.42	0	0	0	0	0	0	-2	-2.2	-2.42
Reclassification to Fair value	-8	-8	-8	0	0	0	0	0	0	-8	-8	-8
Total	-10	-10.2	-10.42	0	0	0	0	0	0	-10	-10.2	-10.42
Reclassification of loans and advances and held to maturity as AFS or fair value												
Adjustment to CVA	-8	-8	-8	0	0	0	0	0	0	-8	-8	-8
Note - no adjustment is made for DVA given exclusion for capital calculation												
Level 3 asset adjustment												
Adjustments to level 3 assets in the banking book (AFS)												
Bonds and other debt securities	-1	-1.1	-1.21	0	0	0	0	0	0	-1	-1.1	-1.21
Loans	-2	-2.2	-2.42	0	0	0	0	0	0	-2	-2.2	-2.42
Equities	-3	-3	-3	0	0	0	0	0	0	-3	-3	-3
Real Estate	-4	-4	-4	0	0	0	0	0	0	-4	-4	-4
Other	-5	-5.5	-6.05	0	0	0	0	0	0	-5	-5.5	-6.05
Adjustments to level 3 assets in the banking book (Fair Value)												
Bonds and other debt securities	-6	-6	-6	0	0	0	0	0	0	-6	-6	-6
Loans	-7	-7	-7	0	0	0	0	0	0	-7	-7	-7
Equities	-8	-8	-8	0	0	0	0	0	0	-8	-8	-8
Real Estate	-9	-9	-9	0	0	0	0	0	0	-9	-9	-9
Other	-10	-10	-10	0	0	0	0	0	0	-10	-10	-10
Adjustments to level 3 assets in the Trading book (Fair Value)												
Bonds and other debt securities	-11	-11	-11	0	0	0	0	0	0	-11	-11	-11
Loans	-12	-12	-12	0	0	0	0	0	0	-12	-12	-12
Equities	-13	-13	-13	0	0	0	0	0	0	-13	-13	-13
Derivatives (pricing model adjustments)	-14	-14	-14	0	0	0	0	0	0	-14	-14	-14
Other	-15	-15	-15	0	0	0	0	0	0	-15	-15	-15
Total impact from level 3 assets	-120	-120.8	-121.7	0	0	0	0	0	0	-120	-120.8	-121.7
Total impact of AQR adjustments for Fair valued assets on numerator of AQR CET1%												
Total impact of AQR adjustments on numerator of AQR CET1%	-138	-139	-140	0	0	0	0	0	0	-138	-139	-140

9.5.3 STEP 3 – CALCULATE AQR-ADJUSTED CET1%

In step 3, the bank's reported CET1% ratio for Dec 2013 is adjusted to determine the AQR-adjusted CET1% for application in the stress test. This involves reading in the total adjustment to available capital from steps 1 and 2 and adding the adjustment to the bank's reported available capital.

If banks have received an offsetting impact from risk protection schemes then the NCA bank team/NCA should assess whether an adjustment should be made to RWA for the reduction of RWA relief from the risk protection scheme under the Supervisory Formula Approach. This is because the AQR may imply adjustments need to be made to the parameters of the supervisory

[94] Equities includes Participations and individual Private Equity exposures

formula (i.e. input parameters to Kirb). This is only required if an offsetting benefit from a risk protection scheme is received in step 1 or 2.

A screenshot from the template is shown below

Figure 45 AQR-adjusted CET1% calculation

Determination of AQR CET1%

Bank CET1% calculation				
	Phase in period for CRR/CRD IV deductions	**2014**	**2015**	**2016**
	Bank reported CET1% (with static balance sheet)	11.0%	10.0%	9.0%
	Bank reported RWA (€MM) (with static balance sheet)	100,000	99,000	98,000
	Implied available capital	11,000	9,900	8,820
AQR impact on available Capital				
	Phase in period for CRR/CRD IV deductions	**2014**	**2015**	**2016**
	Net adjustment to available capital due to provisioning adjustments	-509	-519	-524
	Net adjustment to available capital due to Fair Value asset valuation adjustments	-138	-139	-140
RWA adjustments				
	Phase in period for CRR/CRD IV deductions	**2014**	**2015**	**2016**
	Approximate adjustment to RWA for IRB banks benefitting from risk protection via Supervisory Formula Approach (SFA) - where material	1000	1000	1000
AQR CET1%				
	Phase in period for CRR/CRD IV deductions	**2014**	**2015**	**2016**
	AQR-adjusted CET1%	10.3%	9.2%	8.2%

9.6 SPECIFIC LIST OF ADJUSTMENTS THAT A BANK MAY BE EXPECTED TO INCLUDE IN FUTURE ACCOUNTS OR OTHER RELEVANT EXTERNAL REPORTING

The AQR may lead to a wide range of findings which may or may not need to be included in a bank's accounts or other external reporting. The expectation is that findings will not require historical restatement, unless otherwise required by local law or accounting rules (For IFRS banks, IAS 8 applies). However there may be other changes that should be incorporated into future accounts. Issues that may be expected to be included in future accounts are:

- Adjustments to bank policies that are out of line with accounting prescription (e.g. approach to collateral valuation, use of collateral valuation for provisioning purposes);
- Issues with bank processes that mean that policies around impairment triggers or provisioning calculations are not applied appropriately;
- Changes to approach to reserves for derivative pricing models (quantum and approach);
- Changes to the classification of assets into Held for Trading, Designated at Fair Value TPL, Available for Sale, Held to Maturity and Loans and Receivables (or nGAAP equivalents);
- Changes to the classification of assets in the fair value hierarchy;

- Re-valuation of specific level 3 securities or inclusions of reserves based on approaches applied by NCAs/third parties;
- Development or adjustment of CVA models;
- Increase of parameter uncertainty or model reserves for pricing models where issues are found;
- Revision to specific DCF models for individual sampled files;
- Portfolio wide reassessment of provisions to ensure findings from sampled files have been addressed in all cases.

A report should be produced for each bank on the remediation actions required that should be provided to the bank in the form of a letter to management requiring the prescribed actions. A standard template will be provided to make ongoing monitoring of remediation activities more straightforward.

9.7 OUTPUTS

The objective of this workblock is twofold:

- To produce an AQR-adjusted CET1% that can be used for the purposes of the stress test to make adjustments for all incurred and projected findings from the AQR[95]. This parameter will not be used to adjust bank reported capital ratios
- To allow a letter to be drafted to banks outlining all findings from the AQR that the bank should, according to local law, be required to include in accounts

The following output will need to be produced for this workblock:

Table 84 Outputs for the AQR-adjusted CET1% calculation

Workblock	Output
9. AQR-adjusted CET1% ratio	• Completed T9. AQR-adjusted CET1% adjustment tool • O9B Draft letter to bank outlining actions that should be taken as a consequence of the AQR (referencing output O1B, O2B, O3B, O4B, O7B, O8D)

[95] Incurred losses would be expected to be reflected in bank's Pillar 1 capital requirements following the CA, other findings would be expected to be reflected in Pillar 2 assessments

10 QUALITY ASSURANCE AND PROGRESS TRACKING

This chapter outlines the approach that will be taken to quality assurance (QA) and progress tracking. QA and progress tracking are two complementary processes, whose joint goal is to ensure the accurate and timely delivery of Phase 2 in a standardised manner across all significant banks. Both processes will follow a three lines of defence model.

The NCA bank teams form the first line, being responsible for accurate and timely execution of the AQR in line with guidance issued by the CPMO. The NCA central team forms the second line, independently performing plausibility checks on the work of the NCA bank teams and closely monitoring progress, escalating issues to the CPMO as required. The CPMO forms the third line of defence, reviewing and challenging the execution of the AQR from an SSM-wide perspective, as well as providing a focused investigation of specific issues as required. The CPMO will automatically track progress at an SSM level, and will become involved at an NCA level as appropriate.

Progress tracking will be coordinated within the fortnightly PMO reporting process to minimise the additional effort required.

10.1 SUMMARY OF APPROACH

Figure 46 Overview of progress tracking, QA structure

- The exact structure of the NCA QA teams will differ by country. However the principles they are constructed on are the same – namely performing plausibility and completeness checks on analysis, applying a "second line of defence" for the AQR. This way, any issues can be identified promptly avoiding problems later in the exercise when issues are identified that have gone unnoticed
- Both the QA and Progress Tracking will be carried out in some capacity at each of the 3 levels of "defence", with responsibilities detailed for each stakeholder in the following table.

Table 85 Summary of responsibilities for QA and progress tracking		
Stakeholder	**QA**	**Progress Tracking**
CPMO	• Review and challenge to ensure consistency from a cross-SSM perspective, and investigate specific issues as required and deemed appropriate by the ECB	• Review and challenge of the Phase 2 plan submitted by the NCA • Co-ordination of the fortnightly PMO reporting process • Co-ordination of interim progress reporting as required
NCA	• Perform plausibility checks on the output of the bank teams • Review outputs at a high level (i.e. portfolio level) for consistency across banks in the country • Raise all issues identified to the CPMO via the QA issue log	• Detailed planning of Phase 2 process for all relevant banks, across all workblocks • Aggregation of templates from banks, followed by regular timely submission
NCA bank teams	• Execute the AQR accurately in-line with the guidance issued by the CPMO	• Execute the AQR in a timely manner, in-line with plans and timelines agreed with the NCA

- Neither the exact structure nor the exact approach an NCA should use internally for QA or Progress Tracking will be prescribed precisely in this manual; it is the responsibility of the NCA to ensure that the process it chooses to follow meets its responsibilities – this will be reviewed and challenged by the CPMO during the QA exercise to assess fitness for purpose. Further guidance will however be provided in an annex to this document by 31 March 2014
- The CPMO will internally be split in to three teams
  - CPMO PMO: Responsible for co-ordinating all communication from the NCAs, including help desk requests, QA issue logs and progress tracking
  - CPMO QA&TAT: Responsible for providing guidance on methodology via the help desk and performing centralised QA activities, such as cross-country comparisons
  - CPMO Country Teams: Responsible for country level analysis
- QA does not need to be repeated by both home and host SSM NCAs. Each should retain responsibility for QA of the tasks they are responsible for
- At a minimum, the NCA should direct all information and communication during Phase 2 to the CPMO through the relevant set of templates provided, as summarised in the following table

Table 86 Summary of templates used in communication between NCA and CPMO		
Template	**Purpose**	**Frequency of submission by NCA via Darwin**
PMO templates	For use in the regular fortnightly CPMO PMO reporting cycle	Fortnightly
FAQ templates	To record questions regarding interpretation of the AQR methodology	Daily
QA issue log	To record specific QA issues identified by the NCA	Weekly
Output templates	To capture data submitted for each Phase 2 workblock	As per Table 2

- The CPMO will publish the responses to the FAQs regularly
- Issues encountered during Phase 2 will be dealt with using a range of remedial actions, aimed at allowing the bank in question to complete the exercise on time or to the specified quality level
- Actions proposed will be escalated to a commensurate level within the ECB and may include, for example, conservative assumptions or workarounds being applied, or re-execution of portions of the AQR where required
- The following table provides guidance regarding the key basic checks that should be made with regards to each template to ensure they are filled out completely, before submission

Table 87 Summary of responsibilities for QA and progress tracking		
Workblock	**Output**	**Key checks**
1. Processes, policies and accounting review (PP&A review)	T1 - Processes, policies and accounting review assessment template	• All questions have been answered, with appropriate evidence available to justify answers
	O1B PowerPoint presentation on all remediation activities required to be undertaken by the bank as a consequence of the PP&A review following the CA	• All issues identified either have a remediation activity described or a satisfactory explanation has been provided around why remediation is not required
2. Loan data tape creation and DIV	T2B. DIV monitoring template	• All checks have been performed • Remediation strategies have been defined for all relevant issues
	O2B PowerPoint presentation describing any remedial action the bank should take as a result of DIV following CA	• All issues identified either have a remediation activity described or a satisfactory explanation has been provided around why remediation is not required
3. Sampling	T3 - Sampling rates template	• Data has been entered into sampling rates template correctly • Prescribed sampling rates have been applied accurately • Sample chosen reflects prescribed sampling rates for each stratum
4. Credit file review	T4B. Credit file review findings template	• Template is populated for all sampled Credit Files • Key metrics and multiples (e.g. cash flow multiples) aligned with AQR guidelines (or satisfactory explanation provided)
	O4B PowerPoint presentation describing any remedial action the bank should take as a result of Credit File review	• All issues identified either have a remediation activity described or a satisfactory explanation has been provided around why remediation is not required
5. Collateral and real estate valuation	T5 Collateral and real estate valuation template	• Template is populated for all sampled Collateral and real estate • Valuation guidelines have been followed in full
6. Projection of findings	T6 Projection of findings tool	• Findings from credit file review have been entered into tool accurately and projection of findings has been performed in line with rules of AQR for all relevant metrics

Table 87 Summary of responsibilities for QA and progress tracking		
7. Collective provision analysis	T7 Collective provisioning results template	• Template is fully populated for all required segments • Challenger models have been reviewed and found to be consistent with guidelines for AQR • Top down checks and benchmarking performed on parameters to ensure relationship between provisioning rates by segment is logical
	O7B PowerPoint presentation describing any remedial action the bank should take as a result of Collective provision analysis	• All issues identified either have a remediation activity described or a satisfactory explanation has been provided around why remediation is not required
8. Level 3 fair value exposures review	T8A. Revaluation of non-derivative level 3 assets findings template	• All sampled assets have been revalued in line with guidelines • Explanation provided for the choice of valuation • Findings have been extrapolated where appropriate (i.e. securitisations)
	T8B. Core trading book processes review findings template	• All questions have been answered, with appropriate evidence available to justify answers
	T8C. Level 3 derivative pricing model review findings template	• All questions have been answered, with appropriate evidence available to justify answers • Quantification of key issues has been made where appropriate
	O8D PowerPoint presentation describing any remedial action the bank should take as a result of level 3 fair value exposures review	• Any level 3 non-derivative portfolio that requires wider revaluation has been identified • All issues with core processes or pricing models either have a remediation activity described or a satisfactory explanation has been provided around why remediation is not required • Clear statement has been provided of where derivative fair value reserves should be made, with appropriate evidence provided
9. AQR-adjusted CET1% ratio	T9 AQR-adjusted CET1% adjustment tool	• Template is populated accurately based on outputs of other templates, fully in line with accounting rules
	O9B Draft letter to bank outlining actions that should be taken as a consequence of the AQR (referencing output O1B, O2B, O3B, O4B, O7B, O8D)	• Draft letter has been completed covering all relevant issues

10.2 INDICATIVE TIMELINE FOR QA

The NCAs will be expected to have completed their own QA before final outputs are submitted to the CPMO, clearly if templates are submitted on an interim basis some degree of QA will have been expected to be carried out but may not be fully completed. The following table summarises the indicative timelines for the completion of NCA QA; these dates align to the end points of each workblock.

Table 88 Indicative timeline for completion of NCA quality assurance

NCA Tasks	Indicative date[96]
Planning of Phase 2 tracking	28 February 2014
QA of processes, policies and accounting review	28 March 2014
QA of loan tape creation	14 March 2014
QA of DIV	11 April 2014
QA of Sampling	18 April 2014
QA of Collateral Valuation Review (Priority debtors)	18 April 2014
QA of credit file review (Priority debtors)	2 May 2014
QA of level 3 fair value Exposures Review – core processes review	16 May 2014
QA of Collateral Valuation Review (Risk-based Sample)	6 June 2014
QA of credit file review (Risk-based Sample)	20 June 2014
QA of Projection of Findings of the credit file review	27 June 2014
QA of level 3 non-derivative assets revaluation	27 June 2014
QA of level 3 fair value Exposures Review - derivative pricing models	4 July 2014
QA of Collective Provision Analysis	18 July 2014
QA of AQR-adjusted CET1%	1 August 2014
QA of Phase 3 Preparation	1 August 2014

Note: These dates are in line with the end dates for the respective workblocks. This is because a workblock cannot be considered complete until QA is complete. However, clearly this means that results of the respective workblocks need to be complete in advance of the QA checks being finalised.

10.3 OVERVIEW OF QUALITY ASSURANCE

This sub-section provides further detail on QA. It covers roles and responsibilities as well as an overview of the expected interactions during the QA process.

[96] These indicative dates have been provided as a guide to assist NCAs in the planning process. NCAs have also been communicated a series of firm milestones and are accountable for meeting the dates of these milestones.

The QA process is a continuous process, and will ensure consistent and high standards of work across each component of the AQR. QA will be conducted both by the NCA and the CPMO. If the NCA is executing an element of the Phase 2 work, then an operating model should be defined which ensures a four eyes principle has been applied. The scope of QA is large as it will need to cover each of the ten workblocks of the AQR.

Note that this manual will not prescribe an exhaustive set of checks and investigations the NCAs should execute in order to meet their responsibilities with regards to QA. It remains the responsibility of the NCA to employ an approach commensurate with their situation that allows the NCA meet its responsibilities.

10.3.1 ROLES AND RESPONSIBILITIES

The roles and responsibilities of stakeholders, with reference to Figure 46: Overview of progress tracking, QA structure are as follows. NCA bank team is responsible for

- Executing the AQR in an independent and confidential manner from the Bank itself, and raising issues to the NCA within a timeframe commensurate with the materiality of the issue, for example
  - If a material issue is found that may have an impact on the market or suggests fraud this should be raised immediately to the NCA and not discussed with the Bank
- Executing the AQR accurately and within agreed timelines;
- Working closely with the NCA PMO and QA teams; note that the NCA bank team will not normally interact directly with the CPMO
- Flagging to the NCA any deviations from the methodology as outlined in the AQR methodology or from guidance given in the FAQs

NCA is responsible for

- QA of the work produced by the bank teams and assuring that it is accurate before submission to the CPMO
- Providing methodological guidance to the bank teams consistent with the AQR methodology
- Aggregating questions that are not addressed by the manual or the FAQs and addressing them to the help desk
- Raising QA issues identified using the QA issue log and submitting this CPMO on regular basis

CPMO is responsible for

- Providing SSM wide QA, through for example cross-country consistency checks, to ensure the AQR is carried out accurately and consistently across the SSM
- Responding to technical questions raised via the help desk
- Managing the CPMO QA process at a country level, including communication between the CPMO and the NCA on QA related topics
- Providing technical guidance to the NCAs based on the AQR methodology
- Reviewing and challenging the QA work carried out by the NCAs, through on-site visits where appropriate
- Investigating in detail country level issues, including on-site visits as required

10.3.2 OVERVIEW OF CPMO'S QA PROCESS AND RESULTING INTERACTIONS WITH THE NCAS

The purpose of this section is to give an overview of the process the CPMO will follow to execute QA, and the likely resulting interactions it will have with the NCAs. The CPMO will use information provided in the templates to perform QA, and search for potential issues by

- Comparing AQR results across countries, to ensure the approach outlined has been applied consistently, and highlight areas for further investigation where it has not
- Conducting spot checks of the AQR output
- Holding on-site visits to gain a deep understanding of the QA process followed by the NCA, as well as a forum for reviewing and challenging the output that has been produced
- Reviewing the potential issues that the NCA has raised themselves based on the QA issue log that is regularly submitted

The CPMO will maintain an open constructive dialogue with the NCA regarding QA during the course of Phase 2. This will include holding on-site QA visits and interviews as required and deemed appropriate by the ECB.

10.4 NCA QA EXECUTION GUIDANCE

The purpose of this section is to provide guidance on the QA that should to be carried out by the NCA for each of the workblocks of the AQR. The following table outlines a framework for QA in the AQR, that can be applied to each workblock by the NCA. The framework may not be exhaustive, and the NCA may use other tools to complete the QA as required.

Table 89 NCA quality assurance framework	
QA tool	**Rationale**
1. Template checks	To ensure templates have been filled in completely and within the specified rules
2. Plausibility checks on calculations/sample assessments	To ensure accurate and consistent application of the AQR methodology
3. Comparison of parameters and outputs across segments, portfolios, banks	To identify potential areas of inconsistency for further investigation
4. Comparison of parameters or outputs against industry benchmarks or expert judgement	To ensure accuracy by sense checking parameters and outputs
5. Discussion with NCA bank teams around how they have applied the methodology	To ensure approach and rationale are consistent with the AQR methodology

The following subsections provide more specific guidance with regards to the QA of each workblock

10.4.1 PROCESSES, POLICIES AND ACCOUNTING REVIEW (PP&A)

The Processes, policies and accounting (PP&A) review can begin immediately once NCA Bank teams have been established. An approach of 'constrained expert judgement', i.e. prescriptive guidelines, will be applied to the process review to ensure NCA Bank teams explicitly address all issues required. Objective criteria will help avoid subjectivity and variability in standards across countries.

For the purposes of the PP&A, the CPMO will provide NCAs with the processes, policies and accounting review template as described in Table 2. The NCA will need to submit the completed template to the CPMO once the exercise is finished, and produce a PowerPoint presentation on all remediation activities required to be undertaken by the bank as a consequence of the PP&A review following the CA.

Responsibilities of the NCAs include

- Check template is fully populated
- Check that bank template responses have been signed off by an appropriate and identified senior officer
- Check that evidence is available for answers to the template
- Check all issues identified have appropriate corresponding remedial actions (together with specified timelines, i.e. within Phase 2) or satisfactory explanation is provided around why remedial action is not required

- Check any remedial actions required during the course of Phase 2 (e.g. identification of impact of reclassification of assets from amortised cost to fair value treatment)have been/are being carried out

Responsibilities of the CPMO include

- Check templates are fully populated for all banks in SSM
- Check that CVA challenger model has been completed for all banks in SSM
- Check any Phase 2 remedial actions have been carried out, identifying any cross-NCA inconsistencies in quality and completeness
- Check accounting reclassifications (including any revaluations) are incorporated into AQR-adjusted CET1% template

10.4.2 LOAN TAPE CREATION AND DATA INTEGRITY VALIDATION (DIV)

For the purposes of loan tape creation, the CPMO will provide NCAs with a loan tape data dictionary as described in Table 2. This acts as a checklist for NCA Bank teams to ensure banks have provided all data required. Nothing needs to be submitted to the CPMO.

For the purposes of DIV, the CPMO will provide NCAs with a DIV monitoring template as described in Table 2. This is a R.A.G assessment template for each check prescribed for DIV for each field/combination of fields. A weekly update will need to be submitted to the CPMO. At the end of the exercise the completed DIV monitoring template will be submitted, as well as a PowerPoint presentation describing any remedial action the bank should take as a result of DIV.

Responsibilities of the NCAs include

- Check DIV templates are fully and accurately populated using appropriate sources, identifying any cross-bank inconsistencies in quality
- Check all issues identified have appropriate corresponding remedial actions (with correct timelines, i.e. to fit within wider timelines of Phase 2). If remediation strategies cannot be completed within the timeframe of the exercise, then ensure that conservative proxies/workarounds are in place
- Check DIV findings report and ensure Phase 2 remedial actions have been carried out

Responsibilities of the CPMO include

- Check templates are fully and accurately populated, identifying any cross-NCA inconsistencies in quality

- Check Phase 2 remedial actions have been carried out or that appropriate workarounds are in place
- Providing a final sign off for significant remediation actions proposed by NCAs

10.4.3 SAMPLING

Sampling should begin soon after the DIV process, as once the loan tape of a portfolio has been completed. The sampling rates template provided by the CPMO will constrain the way samples are selected. The tool will be populated by the NCA Bank team. NCAs should verify that the inputs are consistent with the contents of the bank's portfolios and that the outputs (in terms of sampling rates and projection of findings multiples) are taken directly from the tool without adulteration and used directly in the final calculation of capital shortfall. The NCA Bank teams will need to check that the composition of the sample is consistent with what is implied by the sampling tool, including 'reserve' cases. Collection of credit files will continue until all samples are provided.

For the purposes of sampling, the CPMO will provide NCAs with the sampling rates template as described in Table 2. This tool will determine sampling rates for each portfolio for each stratum. An interim version of this should be provided 2 weeks after the DIV process begins, and a final update 2 days after DIV is finished

Responsibilities of the NCAs include

- Verify that the sampling strata have been correctly defined
  - There are no buckets missing, e.g. Higher Risk Cured bucket is missing across all of the exposure size buckets or exposure size bucket number 3 is missing across all of the riskiness buckets
  - There are the correct number of buckets and they are of the correct size
- Verify the correct number of debtors have been selected
  - Verify that the number of debtors included in each 5th Percentile bucket represents 5% of the number of debtors of the corresponding Riskiness bucket
  - Verify that the number of debtors included in each priority sample bucket is correct
  - Verify that the sample selected conforms to the appropriate number for the bucket
- Verify that the sample of debtors has been selected randomly. Verify all steps as set out in the sampling chapter are followed

Responsibilities of the CPMO include

- Ensure correct sampling rate parameters have been applied

10.4.4 CREDIT FILE REVIEW

The CPMO will provide NCAs with a credit file review findings template to capture the findings from the credit file review for each debtor. This template will need to be submitted to the CPMO on a weekly basis until it is complete. NCAs will also need to produce a PowerPoint presentation describing any remedial action the bank should take as a result of the Credit File review. In addition, the CPMO will provide a parameter sheet for collateral indices and other macro indices.

Responsibilities of the NCAs include

- Sense-check classification reviews results against expected results based on the PP&A, provisioning levels and former NCA findings
- Perform spot checks of classification review, especially for high risk items not classified as impaired and/or NPE
- Sense-check provisioning review results against expected results based on the PP&A, provisioning levels, cross-bank comparison and former NCA findings
- For individual impairment review, perform plausibility checks on key metrics out of line with manual (e.g. low haircuts for collateral, high EBITDA multiples)
- Perform spot checks of cash flow projections for individual impairment review
- Review remedial actions report and ensure it is complete

Responsibilities of the CPMO include

- Perform cross bank and country analysis to ensure consistency of application of AQR rules
- Perform spot checks on outliers/apparent deviations from guidelines

10.4.5 COLLATERAL AND REAL ESTATE VALUATION

Prior to beginning collateral valuation analysis, the NCA will be asked to provide key high level assumptions they believe are appropriate for their markets (e.g. ranges for yields or valuation per square metre by region and type of property). These will be reviewed by CPMO to ensure a consistent approach is applied across markets.

All NCA Bank teams will be asked to complete a single template containing findings for all collateral items they re-value. This will include the specific key assumptions applied for each

property. The NCA will then need to ensure that the specific key assumptions are in line with the high level assumptions described above and agreed with the CPMO. Any deviations that are accepted will need to be flagged to the CPMO.

For the purposes of collateral valuation, the CPMO will provide NCAs with the collateral and real estate valuation template as described in Table 2. This template will capture information around collateral revaluations and will need to be submitted to the CPMO on a weekly basis until it is completed.

Responsibilities of the NCAs include

- Obtain reasonable assurance from the NCA bank team that collateral items for sample have been identified and forwarded to the correct parties for revaluation. Understand reasons where this is not the case
- Obtain reasonable assurance that the decision around which collateral should be re-valued and which should be indexed has been made appropriately
- Ensure instruction to property appraiser is consistent with AQR requirements
- Perform spot checks on unusual cases
- Obtain reasonable assurance that findings from collateral review have been fed into the appropriate other workstreams i.e. collective provisioning, level 3 assets, and the credit file review

Responsibilities of the CPMO include

- Perform cross bank and country analysis to ensure consistency of application of AQR rules
- Perform spot checks on outliers/apparent deviations from guidelines

10.4.6 PROJECTION OF FINDINGS OF CREDIT FILE REVIEW

For the purposes of projecting the findings of the credit file review, the CPMO will provide NCAs with the projection of findings tool as described in Table 2. This takes the results of the credit file review and projects findings for the unsampled exposure for the relevant portfolio. These results are used in the AQR-adjusted CET1% ratio template.

Responsibilities of the NCAs include

- Verify projection of findings completed accurately and that steps laid out in Chapter 6 are followed

Responsibilities of the CPMO include

- Check projection of findings has been performed where required following guidelines laid out

10.4.7 COLLECTIVE PROVISION ANALYSIS

Collective provision analysis can begin on an unadjusted basis (taking into account findings from file review later in the process). The NCA Bank teams will be required to produce a summary table of Collective provision analysis parameters. NCAs will sense check the parameters against expectations and verify there are no issues with unexpected findings. This may involve requests being made to review and verify the specific spreadsheets or code used to produce the summary tables. This is likely to involve two steps: the first step (around 1-2 months after DIV is completed) would involve checking analysis with no adjustment for credit file review; the second step would involve the final analysis being reviewed when adjustments have been made to collective provisioning models for the findings from credit file reviews.

The summary tables (at step 1 and 2) will also be provided to the CPMO who will perform their own checks of the key parameters (PI, Cure Rate, LGL etc). This will involve cross-country analysis to ensure appropriate consistency. NCAs will review the rationale for disregarding findings where the Collective provisioning analysis implies the bank was under-provisioned for any portfolio and obtain reasonable assurance that they are comfortable with the conclusions and a consistent approach has been applied between banks. If the NCA conclusion differs from the NCA bank teams' results, the NCA bank team will be asked to either provide more evidence or change their findings. Any situation where either the NCA bank team or the NCA conclude that the significant bank's model is insufficient must be reported to the CPMO for further validation.

Responsibilities of the NCAs include

- Obtain reasonable assurance that parameters have been determined in line with AQR guidelines
- Verify decision to disregard any deviations is appropriate
- Review the findings of the NCA Bank team with respect to the significant bank's collective provisioning model
- Review decision to override/not to override bank model
- Sense check challenger model parameters based on typical experience
- Obtain reasonable assurance that challenger model parameters are adjusted for credit file review findings

Responsibilities of the CPMO include

- Perform cross bank and country analysis to ensure consistency of application of AQR rules
- Perform spot checks on outliers/apparent deviations from guidelines

10.4.8 LEVEL 3 FAIR VALUE EXPOSURES REVIEW

All three components of the level 3 exposures review will require QA and progress tracking. As with the PP&A review an approach of 'constrained expert judgement' will be applied to ensure NCA Bank teams explicitly address all of the issues in a consistent manner. The three components of the level 3 fair value exposures review are:

- Level 3 non-derivative assets review;
- Trading book core processes review;
- Level 3 derivative pricing model review.

10.4.8.1 Revaluation of level 3 non-derivative assets

For the purposes of the revaluation of level 3 non-derivative assets, the CPMO will provide NCAs with a template to present results of the revaluations. The template should be submitted to the CPMO twice - firstly when the positions are entered, and then once it has been completed. A report should also be produced describing any remedial action the bank should take as a result of the revaluation.

Responsibilities of the NCAs include

- Ensure that the correct positions have been selected for revaluation for each asset class (e.g. Top 20);
- Check that the valuer has used an appropriately approach to revalue the chosen positions for each asset class.
- Check that the comparison to the bank valuation has been conducted in an appropriate way and any findings are appropriately reported in results;

Responsibilities of the CPMO include

- Perform cross bank and country analysis to ensure consistency of application of AQR rules
- Perform spot checks on outliers/apparent deviations from guidelines

10.4.8.2 Trading Book core processes review

For the purposes of the core processes review, the CPMO will provide NCAs with the core trading book processes review findings template. This contains a questionnaire for the core processes review, and includes codified definitions of Red/Amber/Green for each element of the review. This should be submitted to the CPMO once completed. A report should also be produced describing any remedial action the bank should take as a result of the review.

Responsibilities of the NCAs include

- Check template is fully populated,
- Check appropriate data has been received to objectively determine RAG score;
- Check appropriate evidence has been provided to support conclusion.

Responsibilities of the CPMO include

- Review remedial actions recommended by review;
- Cross-country consistency checks

10.4.8.3 Level 3 derivative pricing model review

For the purposes of the level 3 derivative pricing model review, the CPMO will provide NCAs with a template to assess the pricing models with codified definitions of High/Medium/Low (H/M/L) for each element of the review. The template will capture the quantitative adjustments for all in-scope pricing models. The template should be completed once when the questionnaire is completed, and then tnightly. A report should also be produced describing any remedial action the bank should take as a result of the review.

Responsibilities of the NCAs include

- Check template is fully populated;
- Check appropriate data has been received to be able to objectively determine H/M/L score;
- Check methodology explanation given for calculation of reserve is sufficiently detailed;
- Check that a quantification of impact has been determined where required and validated by an appropriate valuer

Responsibilities of the CPMO include

- Perform cross bank and country analysis to ensure consistency of application of AQR rules
- Perform spot checks on outliers/apparent deviations from guidelines

10.4.9 APPROACH TO CALCULATING THE AQR-ADJUSTED CET1% RATIO

NCAs will need to write a letter to banks outlining the required adjustments that need to be made to accounts, other regulatory submissions policies and processes. NCAs should also provide guidance over which rules should be included in the calculation where they are not fully defined for future reporting periods.

A template will be provided for calculating the AQR-adjusted CET1%. NCAs will need to verify the template has been completed correctly including verifying that all deductions included in the Single Rule Book[97] have been made (with and without appropriate phase in).

Responsibilities of the NCAs include

- Check AQR-adjusted CET1% template completed fully;
- Check banks have applied appropriate CRR/CRD IV rules when calculating the CET1% ratio (pre-AQR adjustment);

Responsibilities of the CPMO include

- Check calculations performed in line with instruction and adjustment;
- Specific challenge may be made on particular issues on an exceptional basis;
- Ensure letter to banks covers all relevant issues.

10.5 OUTPUTS: QA ISSUE LOG

The objective of QA is to ensure accuracy and consistency in the application of the AQR and thus lend credibility to the process. During the process of QA, issues will be identified that will need to be addressed appropriately. With this in mind, a QA issue log will be issued by the CPMO for use by the NCAs to provide

- A common language with which the CPMO and NCAs can communicate issues
- A tracking tool for issues identified, ensuring that they are recorded, assessed and appropriately addressed at the correct level within the ECB
- A means to aid open and direct communication between the NCAs and the CPMO on issues affecting the AQR

[97] Article 36 of the CRR (a.k.a CRD IV Single Rule Book).

The QA issue log will be submitted on a weekly basis to the CPMO by the NCA, and will consist of a cumulative log of issues that the NCA has identified across its relevant banks. This template will be used as an input to the CPMO QA process.

10.6 PROGRESS TRACKING

10.6.1 ROLES AND RESPONSIBILITIES

This section details the roles and responsibilities of the various stakeholders, with reference to Figure 46: Overview of progress tracking, QA structure as follows. NCA bank teams are responsible for

- Designing a detailed plan for each bank for the AQR exercise, for discussion and agreement with the respective NCA PMO
- Submitting completed templates to the NCA on a weekly basis
- Flagging to the NCA PMO any potential delays or issues that may threaten delivery per the plan agreed

NCA PMO is responsible for

- Tracking and delivery of Phase 2 at a country level, and co-ordinating interactions between the NCA QA team, the NCA bank teams and the CPMO
- Leading the design and implementation of mitigation plans, and liaising with the NCA Bank teams to implement these
- Co-ordinating, aggregating and uploading to Darwin outputs of the AQR in a timely manner, for all relevant banks
- Aggregating weekly submissions from all significant banks to provide a country view using the automatic aggregation tool provided by the CPMO
- Escalating issues to the CPMO if there are delays or issues that may threaten delivery per the agreed country level plan
- The regular fortnightly CPMO PMO reporting cycle, including submission of materials and attendance at meetings; this process will form the basis of central tracking of Phase 2 by the CPMO and is therefore very important.

CPMO PMO is responsible for

- Producing materials for updating the CASC, and bringing key issues to their attention
- Reporting overall progress at a bank level based on the information received in the templates from the NCA PMO

- Challenging progress reports produced by the NCAs, and requiring remediation plans to be created if issues are found.

10.6.2 PROCESS AND REPORTING TIMELINES

The progress tracking will be run in conjunction with the current Phase 2 PMO fortnightly reporting process; the processes will be closely aligned to reduce the administration required. The fortnightly PMO templates will not change, and will continue to be used in the same manner as previously along with the same processes. NCA PMOs will be required to submit the aggregated set of templates from across the significant banks on a regular basis to the CPMO via Darwin, at the frequency stated in Table 2. Where a submission is required at the end of a process or task, an NCA may send the submission prior to the deadline.

The Bank Level AQR templates will be used for Progress Tracking, for example through monitoring of the number of completed fields vs. the number of outstanding fields per template. The CPMO PMO will provide a tracking tool for the NCAs that they may use as they see fit for their own purposes, that will provide a progress dash-board based upon the underlying templates that are being filled in across the banks.