Reserve Bank of New Zealand
Te Pūtea Matua

# BPR133

# IRB Credit Risk RWAs

## Purpose of document

This document applies only to banks that have been accredited by the Reserve Bank to use the internal-ratings based (**IRB**) approach for calculating risk-weighted assets (**RWAs**) on some of their credit exposures. It sets out the methods that an **IRB bank** must use to calculate **RWAs** on credit exposures that are subject to the **IRB approach**, as part of the calculation of total **RWAs**. It also sets out the methods to be used for calculating expected losses (**EL**) on the same **credit risk** exposures, which is used as part of the definition of regulatory capital. These form part of the calculation of capital ratios, as defined in BPR100 and BPR130, which a bank must carry out to check that it complies with minimum regulatory capital requirements.

# Document version history

| | |
|---|---|
| 1 July 2021 | First issue date |
| 1 October 2021 | Minor layout improvements |
| 1 October 2023 | Revised for technical changes |
| 1 July 2024 | Revised for minor correction |

## Conditions of registration

The Banking (Prudential Supervision) Act 1989 (the Act) permits the Reserve Bank to impose conditions of registration (conditions) on registered banks[1].

This document BPR133: IRB Credit Risk RWAs forms part of the requirements for the following conditions:*

- A New Zealand-incorporated **registered bank** is normally subject to a condition requiring it to maintain capital ratios above specified minimum levels, and also to a condition imposing restrictions on its dividend payments when its **prudential capital buffer ratio** falls below specified levels[2]. This document sets out the **IRB** risk-weighting methodology for **credit risk RWAs** that will be needed by an **IRB bank** as part of its calculation of total **credit risk RWAs**, needed in turn to allow the bank to calculate its day-to-day values for the capital ratios and the capital buffer ratio, and hence monitor its compliance with these capital adequacy conditions.

* All of the material set out in this document forms part of the requirements of the applicable condition, except material that is expressly identified as guidance by being included in a shaded box like this.

[1] The conditions can relate to any of the matters referred to in sections 73 – 73B, 78 and 81. The standard conditions are contained in Appendix 1 of document BS1: Statement of Principles.
[2] These conditions of registration relate to the matter referred to in: section 78(1)(c) (capital in relation to the size and nature of the business).

# BPR133: IRB Credit Risk RWAs

Part A: Introduction and overview

Part B: Exposure categories

Part C: Corporate, sovereign, and bank exposure classes

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# Part A: Introduction and overview

## A1 Introduction

### A1.1 IRB credit risk methodology

1. This document–

   a. applies to a bank that has been accredited by the Reserve Bank to use the **IRB approach** for calculating risk-weighted assets (**RWAs**) for **credit risk** (an **IRB bank**); and

   b. sets out–

      i. the methodology to be used by an **IRB bank** to calculate **credit risk RWAs** on credit exposures falling within a **modelled exposure class**, as part of the calculation of total **credit risk** RWAs as specified in BPR130, when calculating capital ratios as defined in BPR100; and

      ii. the IRB methodology for calculating expected losses (**EL**) on the same **credit risk** exposures, and determining the amount of any resulting deduction required from **CET1 capital**, or addition permitted to **Tier 2 capital**, as provided for in the definitions of capital in BPR100.

> Guidance: **Credit risk RWAs** calculated under the **IRB approach** are intended to measure a bank's unexpected losses (**UL**) on **credit risk** exposures, and are a component of the denominator in calculating a bank's capital ratios. The **IRB approach** also requires a bank to calculate expected losses (**EL**) on **credit risk** exposures, which are compared to a bank's eligible loan **loss allowances** to make adjustments to the bank's measures of capital, that is, the numerator in the capital ratios.

2. A bank may use this methodology for calculating **credit risk RWAs** only if it has been accredited to do so by the Reserve Bank, and only for exposures falling within an accredited portfolio: in all other cases, the bank must use the methodology set out in BPR131.

3. Some parts of the **IRB** calculation approach depend on methodology that is also used in the standardised approach, and in those cases cross-references to BPR131 are given in this document.

## A2 Categorisation of exposures

### A2.1 Determination of credit exposures with modelled RWAs

1. An **IRB bank** must categorise all credit exposures and other assets falling within the scope of calculation specified in section A1.3 of BPR130 into the following exposure classes:

   a. corporate; and

   b. **sovereign**; and

   c. bank; and

d. retail; and

e. **equity**; and

f. a residual class that includes certain kinds of leases, fixed assets and all other claims.

2. Within the corporate exposure class, four sub-classes of specialised lending and a farm lending sub-class are separately identified.

3. Within the retail exposure class, four exposure sub-classes are separately identified.

4. Within the corporate and retail exposure classes, a distinct treatment for purchased receivables is allowed under certain conditions.

5. To categorise its exposures into the exposure classes and subclasses referred to in subsections (1) to (4), the bank must apply the detailed definitions set out in Part B.

6. A credit exposure belongs to a **modelled exposure class** only if the exposure class to which it belongs is classified as a **modelled exposure class** in section C1.5 of BPR130.

7. This document sets out the specific formulae that a bank must use to calculate the **RWA** for any exposure that belongs to a **modelled exposure class** and for which the bank has an accredited model.

Guidance: As provided in BPR130, an **IRB bank** must calculate the **RWA** on all other exposures using the standardised approach set out in the BPR131.

## A3 Overview of RWA calculation

### A3.1 Overview

1. An **IRB bank** must calculate total **IRB RWAs** for **credit risk** as the sum of the items listed in section A3.2(2).

2. Parts C to E provide the formulae for calculating **RWAs** for **credit risk** across the range of exposure types within the IRB modelling approach.

3. The **RWA** calculations take account of **credit risk** mitigation as provided for within each of those formulae.

### A3.2 Process of IRB RWA calculation

1. The calculation of **RWAs** subject to the **IRB approach** must be carried out in accordance with the process summarised in subsection (2).

Guidance: Each of the sums summarised in subsection (2) provides a link to the section in which the relevant formula may be found, and further information about how each particular formula is to be applied.

2. Total **IRB RWAs** is the sum of the following items:

a. the sum of **RWAs** for the credit exposure (other than a corporate exposure categorised as specialised lending and subject to the slotting approach) to each

counterparty within the corporate, **sovereign**, or bank exposure class, and within an accredited **IRB** portfolio, calculated using the formula in section C8.4; and

Guidance: The **sovereign** and bank exposure classes will cease to be **modelled exposure classes** with effect from 1 January 2022, and for exposures within these classes the **IRB approach** will be replaced by the standardised risk-weight approach in BPR131.

**b.** the sum of **RWAs** for corporate specialised lending subject to the slotting approach, calculated by applying the risk-weights in Table C9.3 (see section C9.3) to the exposure amount as specified in section C9.2; and

**c.** the sum of **RWAs** for each standard non-**defaulted residential mortgage loan** falling within an accredited **IRB** portfolio, calculated for each loan in accordance with section D6.2; and

Guidance: **Reverse RMLs** are subject to a standardised risk-weight approach, so do not fall within the calculation of **IRB RWAs**.

**d.** the sum of **RWAs** for each non-**defaulted** exposure falling within an accredited **IRB** portfolio for retail exposures other than **residential mortgage loans**, calculated in accordance with section D6.3; and

**e.** the sum of **RWAs** for each **defaulted** exposure falling within an accredited **IRB** portfolio for retail exposures, calculated in accordance with section D6.4; and

**f.** the sum of **RWAs** calculated for each pool of purchased receivables falling within the retail class, in accordance with section E2.1, taking account of the requirements in sections E2.2 to E2.4 and the treatment of retail exposures in Part D; and

**g.** the sum of **RWAs** for each pool of corporate purchased receivables that the bank treats as individual exposures, calculated in accordance with section E3.1(1), taking account of the treatment of corporate exposures in Part C; and

**h.** the sum of **RWAs** for each pool of corporate purchased receivables for which the bank applies the top-down approach to risk-weighting calculated in accordance with section E3.4; and

**i.** the sum of **RWAs** for **dilution risk** on retail and corporate purchased receivables, calculated in accordance with section E4.4; and

**j.** the sum of **RWAs** arising from the bank's involvement with a qualifying or non-**qualifying central counterparty** (**CCP**), arising from trades settled on the **CCP** or from the bank's membership of the **CCP**–

  **i.** where such involvement falls within one of the situations covered in Part G of BPR131 and that Part specifies that, in that situation, the bank must calculate the **RWA** using the approach it is required to use for a bilateral exposure to the counterparty; and

  **ii.** where the counterparty is a modelled exposure for the bank; and

iii. in which case, the **RWA** must be calculated using the applicable IRB methodology set out in Part C.

Guidance: Part G of BPR131 specifies a number of different situations in which a bank is exposed to counterparty **credit risk**, including: the bank is a clearing member of a **qualifying CCP** (**QCCP**), settling trades on its own behalf, or enabling its clients to settle trades on the **QCCP**; the bank is a client of a **QCCP** clearing member that acts as intermediary or guarantor for the bank's trades settled on the **QCCP**; the bank has posted collateral to a **QCCP** in relation to trades settled on the **QCCP**; or the bank has a trade exposure to a non-**QCCP**.

In most cases in Part G of BPR131 a standardised risk-weighting approach applies, and an **IRB bank** must include the standardised **RWAs** for counterparty credit risk, calculated using Part G of BPR131, within total standardised **RWAs**.

In some cases the treatment requires an **IRB bank** to risk-weight the exposure amount to a client bank or to the **CCP** using the general **IRB approach** for bank or corporate exposures, set out in Part C of this document. The bank must include such amounts within total **IRB RWAs**.

# Part B: Exposure categories

## B1 Corporate exposures

### B1.1 Meaning of corporate exposures

1. A corporate exposure is a debt obligation of a corporation, partnership, or proprietorship that does not fit into another **IRB** exposure class.

2. Banks may separately address exposures to small- and medium-sized entities (**SMEs**) in a Retail SME sub-category, as defined in section B4.3.

### B1.2 Specialised lending (SL)

1. Within the corporate exposure class, there are four sub-classes of specialised lending (**SL**).

2. A specialised lending exposure possesses the following characteristics, either in legal form or in economic substance:

   a. an exposure to an entity (often a special purpose entity (**SPE**)) which exists specifically to finance and/or operate physical assets and is to a borrowing entity that has no other material assets or activities, and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the asset(s) being financed; and

   b. the terms of the obligation give the bank a substantial degree of control over the asset(s) and the income that it generates; and

   c. as a result of these factors, the primary source of repayment of the obligation is the income generated by the asset(s), rather than the independent capacity of a broader commercial enterprise.

### B1.3 Specialised lending: sub-classes

1. The four sub-classes of specialised lending are–

   a. project finance:

   b. object finance:

   c. commodities finance:

   d. income-producing real estate.

2. Each of these sub-classes is separately defined, in sections B1.4 to B1.7.

### B1.4 Meaning of project finance

Project finance is a method of funding in which the revenues generated by a single project act as the primary source of both the repayment and the security for the exposure.

Guidance: This type of financing is usually for large, complex, and expensive installations and may be for either new installations or refinancing existing installations, with or without improvements. The borrower is usually an SPE that is not permitted to perform any function other than developing,

owning, and operating the installation. Consequently, repayment depends primarily on the project's cash flow and on the collateral value of the project's assets.

### B1.5 Meaning of object finance

Object finance refers to a method of funding the acquisition of physical assets where the repayment of the exposure is dependent on the cash flows generated by the specific assets (that is, the "objects") that have been financed by and pledged or assigned to the lender.

Guidance: A primary source of these cash flows might be rental or lease contracts with one or more third parties.

### B1.6 Meaning of commodities finance

Commodities finance refers to structured short-term lending to finance reserves, inventories, or receivables of exchange-traded commodities, where the exposure will be repaid from the proceeds of the sale of the **commodity** and the borrower has no independent capacity to repay the exposure.

Guidance: This is the case when the borrower has no other activities and no other material assets on its balance sheet. The structured nature of the financing is designed to compensate for the weak credit quality of the borrower. The exposure's rating reflects its self-liquidating nature and the structure of the transaction rather than the credit quality of the borrower. Such lending should be distinguished from exposures financing the reserves, inventories, or receivables of other more diversified corporate borrowers. Banks are able to rate the credit quality of the latter type of borrowers based on their broader ongoing operations. In such cases, the value of the **commodity** serves as a risk mitigant rather than as the primary source of repayment.

### B1.7 Meaning of income-producing real estate (IPRE)

Income-producing real estate (**IPRE**) refers to a method of providing funding to real estate where the prospects for repayment and recovery on the exposure depend primarily on the cash flows generated by the asset.

Guidance: The distinguishing characteristic of **IPRE**, as opposed to other corporate exposures that are collateralised by real estate, is the strong positive correlation in the **IPRE** case between the prospects for repayment of the exposure and the prospects for recovery in the event of **default**, with both depending primarily on the cash flows generated by a property.

### B1.8 Meaning of corporate purchased receivables

Corporate purchased receivables refers to a pool of receivables that a bank has purchased and where the underlying receivables meet the definition of corporate exposures in this subpart.

### B1.9 Farm lending exposures

Farm lending exposures are a sub-class of the corporate asset class, and are defined as exposures to borrowers that are classified within "agriculture" in ANZSIC06.

> Guidance: ANZSIC06 is the Australian and New Zealand Standard Industrial Classification 2006, and codes in the range A011 to A019 are classified as agriculture.

## B2 Sovereign exposure class

### B2.1 Coverage of sovereign exposure class

1. This exposure class covers all exposures to the **Crown**, to the Reserve Bank of New Zealand, or to any other **sovereign** or its central bank.
2. The exposure class also covers the **lowest-risk multilateral development banks and supranationals** listed in section C2.4(1) of BPR131.

> Guidance: The multilateral development banks (**MDBs**) listed in section C2.4(1) of BPR131 are currently considered by the Basel Committee to meet specified criteria implying the highest credit quality. The list may be updated from time to time. The other international organisations in the list are likewise deemed to be very low risk.

## B3 Bank exposure class

### B3.1 Coverage of bank exposure class

The bank exposure class covers exposures to any **bank**, **public sector entity**, or **multilateral development bank** or **other development bank**.

## B4 Retail exposures

### B4.1 Coverage of retail exposure class

1. The retail exposure class comprises exposures that meet both the general criteria described in this section and the criteria specific to one of the retail exposure sub-classes set out in sections B4.2 to B4.5.
2. A retail exposure must be to an individual (that is, a natural person) or to a small or medium enterprise (**SME**).

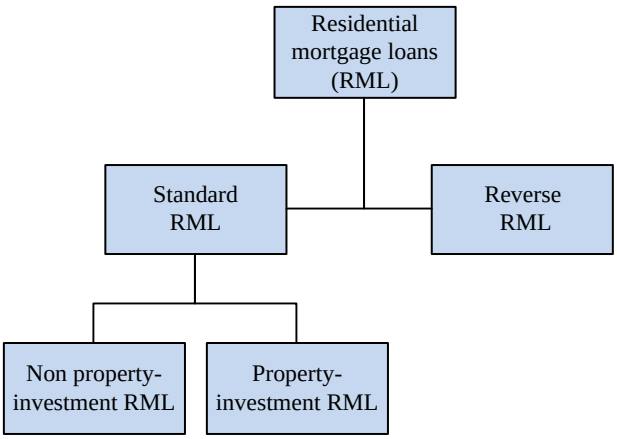
Guidance: Exposures to individuals are eligible for retail treatment regardless of the size of the exposure.

3. A retail exposure must be one of a large pool of exposures sharing similar risk characteristics that are managed by the bank on a pooled basis.

Guidance: This does not prevent a bank from treating exposures individually at some stages in the risk-management process.

## B4.2 Coverage of residential mortgage sub-class

1. The definitions of **residential mortgage loan** (**RML**) and of the sub-categories of RML shown in the following diagram are provided in sections C3.2 to C3.4 of BPR131.




2. The **IRB** risk-weighting treatment for a **property-investment RML** provided in Part D must only be used if the loan also meets the general criteria for the retail exposure class in section B4.1.

3. A **standard RML** is eligible for the retail risk-weighting treatment provided in Part D irrespective of exposure size.

4. **Reverse RMLs** are subject to a standardised risk-weighting approach, provided in section 3.10 of BPR131.

## B4.3 Retail exposures to small and medium enterprises (Retail SME)

A loan that is extended to a small business and managed as a retail exposure, and that does not qualify as an **RML**, is eligible for retail treatment where the banking group's total business-related exposure to the borrowing enterprise (on a consolidated basis, where applicable) is less than NZD 1 million.

Guidance: Small business loans extended through, or guaranteed by, an individual are subject to the same exposure threshold. A business loan above this threshold falls within the corporate exposure class, even if it is extended through, or guaranteed by, an individual.

### B4.4 Retail purchased receivables

Retail purchased receivables refers to a pool of receivables that a bank has purchased and where the underlying receivables meet the definition of retail exposures in this subpart (see section B4.1).

### B4.5 All other retail exposures

This category of retail exposures comprises any retail exposure not specifically defined in any of sections B4.2 to B4.4.

## B5 Equity exposures

### B5.1 Coverage of equity exposure class

Any instrument recognised as an asset on the balance sheet that meets the definition of **equity** must be categorised in the separate **equity** exposure class, rather than in the exposure class applicable to the **issuer** of the **equity**.

> Guidance: As provided in section A1.3 of BPR130, this does not include any **equity** in a consolidated **subsidiary**, nor any instrument that must be deducted from any category of capital in accordance with BPR110 for the purpose of defining the capital ratios.

## B6 Other exposures class

### B6.1 Coverage of other exposures class

This exposure class includes all exposures that fall within the scope of calculation specified in section A1.3 of BPR130 and are not otherwise defined in this Part.

# Part C: Corporate, sovereign, and bank exposure classes

## C1 Introduction

### C1.1 Overview of corporate, sovereign, and bank RWA calculation

1. This Part sets out the method of calculating the minimum capital requirement for unexpected loss (**UL**), and the corresponding **credit risk** **RWAs**, for the corporate, **sovereign**, and bank **IRB** exposure classes.

> Guidance: This methodology is only available for the **sovereign** and bank exposure classes for as long as they qualify as **modelled exposure classes**, as provided for in section C1.5 of BPR130 (that is, until 1 January 2022).

2. The **credit risk** components that are dealt with in this Part, and that serve as inputs into the **IRB** risk-weight functions for the corporate, **sovereign**, and bank **IRB** exposure classes, are as follows:

   a. **probability of default** (**PD**) (see Part C2); and

   b. **loss given default** (**LGD**) (see Part C3); and

   c. adjustments to **PD** and **LGD** to reflect the **credit risk** mitigation provided by any eligible guarantees or **credit derivatives** (see Part C4); and

> Guidance: Other forms of **credit risk** mitigation may be recognised in the calculation of certain of the components described in subsection (2), as specified in the section dealing with each component. These sections cross-refer as needed to BPR132, which sets out the detailed conditions for the recognition of **credit risk** mitigation and how it must be recognised in **RWA** calculation.

   d. **exposure at default** (**EAD**) (see Part C5); and

   e. maturity (M) (see Part C6); and

   f. correlation (R) (see Part C7).

3. Part C8 prescribes the formulae that a bank must use to calculate the capital requirement (K) for non-**defaulted** and **defaulted** exposures respectively, and to calculate the corresponding RWA amounts, using the values of the components calculated in accordance with Parts C2 to C7.

4. However, the calculations in Part C8 do not apply in relation to specialised lending (**SL**) that is subject to the supervisory slotting approach: the method for calculating **RWAs** in this case is set out separately in Part C9.

> Guidance: An **IRB** accreditation granted to a bank for a corporate exposure identified as specialised lending may specify that the supervisory slotting approach must be used rather than the **IRB approach**.

### C1.2 Treatment of leases provided by bank

1. If the bank has provided lease financing to a counterparty within the corporate, **sovereign**, or bank exposure classes, the **credit risk** **RWA** must, unless the bank is exposed to **residual value risk** (in which case subsection (2) applies), be calculated using the method in this part, treating the lease as an exposure to the lessee secured by the relevant collateral.

2. The bank as lessor must treat any lease that exposes it to **residual value risk** as follows:

   a. the discounted lease payment stream must be risk-weighted according to the **probability of default** (**PD**) and **loss given default** (**LGD**) assigned to the lessee; and

   b. the residual value is subject to the standardised risk-weighting treatment provided in section C2.17 of BPR131 and risk-weighted at 100%.

3. For the purpose of this section, **residual value risk** is the bank's exposure to potential loss due to the fair value of the equipment declining below its residual estimate at lease inception.

## C2 Estimation of PD

### C2.1 Minimum requirements for PD estimates

The minimum requirements, under the **IRB approach**, for the derivation of own **PD** estimates associated with each internal obligor grade are detailed in BPR134.

### C2.2 Calculation of PD

1. For exposures in the corporate or bank exposure class, **PD** is the greater of the one-year **PD** associated with the internal obligor grade to which that exposure is assigned and 0.03%.

2. For exposures in the **sovereign** exposure class, **PD** is the one-year **PD** associated with the internal obligor grade to which that exposure is assigned.

3. A 100% **PD** must be assigned to **default** grades (see subpart E2 of BPR134).

### C2.3 Effect of guarantee or credit derivative on calculation of PD

If a bank owns an eligible guarantee or **credit derivative** to mitigate the **credit risk** of all or part of an exposure, the bank may adjust the calculation of **PD** for that exposure, as provided for in section C4.1

## C3 Estimation of LGD

### C3.1 Bank may use own LGD estimates

1. A bank using the **IRB approach** for the corporate, **sovereign**, or bank exposure classes (or for certain exposures within those exposure classes) may use its own estimates of **LGD**.

2. The own estimates must—

   a. meet the requirements detailed in BPR134; and

   b. be determined according to the bank's own methodologies.

3. To the extent that exposures are secured by mortgages over residential property, the **LGDs** corresponding to different LVRs set out in column 3 of table D3.2 (see section D3.2(4)) must be used unless the bank has the consent of the Reserve Bank to use its own **LGD** estimates.

4. Farm lending exposures are subject to minimum **LGD** requirements as set out in section C3.2.

## C3.2 Own LGD estimates for farm lending exposures

1. Own estimates of **LGD** for farm lending exposures must be greater than or equal to the minimum values that correspond to the different levels of LVR in Table C3.2.

***Table C3.2***

***Minimum LGD for farm lending exposures***

| LVR | LGD |
|---|---|
| 70% and over | 42.5% |
| 60-69% | 40.0% |
| 50-59% | 32.5% |
| 40-49% | 22.5% |
| 30-39% | 15.0% |
| Under 30% | 10.0% |

2. For the purposes of this section, loan to value ratio (LVR) means the current loan balance as a percentage of the value of the security, as at the most recent valuation.

3. The current loan balance includes the **EAD** amount of any off-balance sheet exposures calculated in accordance with Part C5.

## C3.3 Recognition of credit risk mitigation in LGD

1. If a bank holds collateral against an exposure other than a counterparty exposure arising on a **derivative** or **SFT**, the bank may recognise the **credit risk** mitigation benefit of that collateral in its own estimation approach to **LGD**, subject to the minimum LGDs applying in the cases specified in sections C3.1(3) and C3.2(1).

2. If the bank holds collateral against the **credit risk** exposure arising from one or more **derivatives** or **SFTs** with a counterparty, the bank may only recognise the benefit of the collateral by adjusting **EAD**, as provided for in the calculation of **EAD** for counterparty credit risk (CCR) specified in section C5.6.

3. To avoid doubt, the bank may use its own **LGD** estimate for the equivalent unsecured exposure amount arising on **derivatives** or **SFTs** with a counterparty after adjusting the exposure for collateral as provided for in subsection (2).

4. If the bank holds an eligible guarantee or **credit derivative** to mitigate the **credit risk** of all or part of an exposure, the bank may adjust the calculation of **LGD** for that exposure as provided for in section C4.1.

## C3.4 Measurement of LGD

**LGD** estimates must be measured as a percentage of **EAD**.

## C4 Guarantees and credit derivatives

### C4.1 Recognition of guarantees and credit derivatives in PD or LGD

1. A bank may reflect the risk-mitigating effect of a guarantee or **credit derivative** through an adjustment to either **PD** or **LGD**, provided that the credit protection provider is also subject to an IRB model.

2. The general provisions applying to the recognition of guarantees and **credit derivatives** for banks using the **IRB approach** are set out in subpart D2 of BPR132.

3. That subpart also includes cross-references to subpart D1 of BPR132, which also applies to banks using the standardised approach.

4. Banks using the **IRB approach** must comply with all requirements that apply to **IRB banks**, as provided for in those Parts.

> Guidance: Where the bank intends to recognise a guarantee or **credit derivative** provided by a credit protection provider that is subject to the standardised approach, it must use a fully standardised **RWA** calculation for the exposure, in accordance with BPR131 and subpart D1 of BPR132. This is required by section C1.2(2)(c) of BPR130.

## C5 Estimation of EAD

### C5.1 Introduction

1. This subpart sets out the approach for determining **exposure at default** (**EAD**).

2. A bank using the **IRB approach** may use its own estimates of **EAD** for on-balance sheet credit exposures and for off-balance sheet credit exposures arising from contingent liabilities.

3. However, a bank must calculate any exposure to counterparty **credit risk** arising from a **derivative** or **SFT** following the standardised approach, as provided for in section C5.6.

### C5.2 Conditions applying to use of own values of EAD

1. A bank may use its own internal estimates of **EAD** if–

   a. those values are determined in accordance with the bank's methodologies; and

   b. those methodologies have been approved by the Reserve Bank; and

   c. the minimum requirements specified in subpart E7 of BPR134: **IRB** Minimum system requirements are met.

2. **EAD** in respect of each exposure (both on- and off-balance sheet) must be measured gross of allowances for impairment and partial write-offs.

### C5.3 Exposure measurement for on-balance sheet credit exposures

1. The **EAD** estimate on a drawn amount (that is, an on-balance sheet exposure) must not be less than the contractual amount owed by the obligor at the time of **default**, nor should it be less than the sum of:

a. the amount by which **CET1 capital** would be reduced if the exposure were fully written-off; and

b. any associated allowance for impairment and partial write-offs

2. When the difference between the **EAD** estimate and the sum of subsection (1)(a) and (b) is positive, this amount is termed a "discount", which must not be taken into account when calculating risk-weighted assets.

Guidance: This means that discounts must be disregarded and the full value of **EAD** will be applied for the purposes of determining **RWA**.

3. However, in calculating the capital requirement, such discounts may be included in the measurement of total eligible allowances for impairment, for the purpose of offsetting expected losses as provided for in section F1.3.

Guidance: The following is a worked example of the **EAD** measurement specified in this section:

A bank acquires a bond of an **issuer** that has suffered a significant credit rating downgrade. Assume face value and contractual amount owed (CAO) = 1000, but because of the downgrades, the purchase price is 600. The bank raises an initial impairment allowance (**IMP**) of 20, based on lifetime expected losses.

So the full capital write-off amount (**FWO**) is 600 - 20 = 580. Assume that so far there is no partial write-off (**PWO**).

Subsection (1) says that estimated **EAD** ≥ Max [CAO, (FWO + IMP + PWO)]. In this example, **EAD** must be at least max (1000, 580+20+0), that is, 1000.

Subsection (2) says that Discount = [CAO – (FWO + IMP + PWO)]. In this example, the discount is (1000-(580+20+0)), that is, 400.

Eligible allowances (**EA**) = Discount + IMP + PWO, as defined in section F1.3. In this example, EA = 400+20+0, that is, 420.

So in this example, the bank must use EAD of at least 1000 for its **RWA** calculation, but can take account of eligible allowances of 420 to offset expected losses (**EL**) under Part F.

## C5.4 Netting: on-balance sheet exposures

On-balance sheet netting of the bank's loans to and deposits from a corporate, **sovereign**, or bank counterparty is permitted, provided that the bank uses the approach, and satisfies the conditions, set out in Part C of BPR132.

## C5.5 Exposure measurement for contingent liabilities

1. A bank must reflect in its total **RWAs** the credit exposure arising from any transaction of a type listed in this section that the bank has undertaken.

2. For the transactions referred to in subsection (6)(a) and (b), the bank must use the **RWA** calculation methodology that is applicable to the type of asset or, if the asset is a security, to the **issuer** of the security, rather than to the transaction counterparty, and the **EAD** calculated under this section must feed into that **RWA** methodology.

> Guidance: A commitment to purchase equity (including an investment in the BGF) should align with the treatment for the equity holding if the purchase goes ahead, namely the standardised treatment in BPR131 section D2.2

3. For all other transaction types listed in subsections (6) and (7), the **EAD** calculated under this section must be included as part of the total **EAD** calculated for the counterparty under this subpart.

4. To calculate **EAD** for the product types listed in subsections (6) and (7), a bank must calculate the equivalent exposure amount by multiplying the notional exposure amount by a credit conversion factor (**CCF**).

5. For the calculation in subsection (4), the bank must use a notional exposure amount that–

   a. is the gross exposure before taking account of any provisions for expected credit losses or partial write-offs; and

   b. in the case of a commitment, is the undrawn amount on the commitment

> Guidance: Any amount that a borrower has drawn down under a commitment must be treated as an on-balance sheet exposure in accordance with section C5.3.

6. For the following types of transaction, a bank must use a **CCF** of 100%:

   a. **asset sale with recourse**:

   b. forward asset purchase:

   c. **direct credit substitute**:

   d. **commitment with certain draw-down**:

   e. **placement of forward deposit**.

7. For any transaction of a type specified in column 1 of Table C5.5, a bank must either produce its own internal estimate of **CCF** or use the corresponding **CCF** specified in column 2 of Table C5.5:

***Table C5.5***

***CCFs***

| Type of transaction | CCF (%) |
|---|---|
| note issuance facility | 75 |
| revolving underwriting facility | 75 |

| Type of transaction | CCF (%) |
|---|---|
| performance-related contingency | 50 |
| trade-related contingent item | 20 |
| other commitment where **original maturity** is more than 1 year | 50 |
| other commitment where **original maturity** is less than or equal to 1 year | 20 |
| other commitment that cancels automatically when the creditworthiness of the counterparty deteriorates or which can be cancelled unconditionally at any time without prior notice | 0 |

## C5.6 Exposure measurement for counterparty credit risk (CCR)

1. In calculating the **EAD** for a given counterparty, a bank must include an exposure amount that reflects the counterparty **credit risk** arising from any **derivative** or **SFT** with the counterparty.

2. The bank must calculate the exposure amount referred to in subsection (1) using the standardised credit equivalent amount (**CEA**) calculations set out in Part E of BPR131.

3. The transactions that are subject to the **CEA** calculation methodology specified in Part E of BPR131 are as follows:

   a. **derivatives** that give rise to counterparty **credit risk**, arising from contracted future payment flows with an identified counterparty that are based on market variables; and

   b. **securities financing transactions** (**SFTs**).

Guidance: The **CEA** calculation methodology in Part E of BPR131 includes recognition of a bilateral netting agreement across a number of **derivatives** with a given counterparty, subject to specified conditions. The **CEA** calculation methodology also allows the bank to recognise the **credit risk** mitigation benefit of collateral that it holds against the counterparty exposure arising from individual or bilaterally netted **derivatives**. The conditions and the methodology for recognising collateral are the standardised approach set out in BPR132.

Part E of BPR131 refers to BPR132 for the methodology, and minimum requirements, for the calculation of the **CEA** on an **SFT**. The **SFT** approach is a particular case of the general collateral treatment in BPR132. BPR132 also includes minimum conditions and the required calculation for the recognition of a master netting agreement across a number of **SFTs** with a given counterparty.

Exposures arising from trades settled on central counterparties are dealt with in Part G of BPR131, and are generally subject to a standardised **RWA** treatment. In certain cases specified in Part G, a trade must be treated as a bilateral exposure

to the counterparty, and the **CEA** of the trade must be added to total **EAD** for the counterparty, and risk-weighted accordingly.

## C6 Calculation of effective maturity (M)

### C6.1 Effective maturity (M)

A bank using the **IRB approach** for the corporate, **sovereign**, and bank exposure classes, must, for use in the capital requirement formula (see section C8.2), calculate maturity (M) in accordance with section C6.2.

### C6.2 Calculation of M

1. The bank must calculate **M** using the **effective maturity** calculation in sections C6.3 to C6.5.
2. However, the calculation is subject to–
   a. the floor described in subsection (3); and
   b. the ceiling described in subsection (4).
3. **M** must be the greater of one year ("the floor") and the figure derived from the **effective maturity** calculation, unless the exposure–
   a. satisfies the conditions for one of the short-term exposure exemptions in sections C6.6 and C6.7, in which case **M** may be less than one year, as provided for in those sections; or
   b. is a farm lending exposure, in which case the bank must set **M** at either–
      i. the greater of 2.5 years and the figure from the **effective maturity** calculation; or
      ii. 2.5 years.
4. M must be the lesser of 5 years ("the ceiling") and the figure from the effective maturity calculation.

### C6.3 Effective maturity calculation: general

1. For an exposure subject to a specified cash flow schedule, the bank must calculate the remaining effective maturity (M) in accordance with the following formula:

$$M = \sum_t \left( t \cdot \frac{CF_t}{TCF} \right)$$

where

$CF_t$ denotes the cash flow contractually payable by the obligor at time t; and

t is expressed in years; and

Guidance: For example, where a payment is due to be received in 18 months, t = 1.5.

TCF is the total payable across the whole cash flow schedule.

2. However, if the bank is unable to calculate **M** for contracted payments in accordance with subsection (1), it may use a more conservative measure of M, but that measure must not be not less than the maximum remaining time (in years) that the obligor is permitted to fully discharge its contractual obligations under the terms of the facility agreement.

## C6.4 Effective maturity: amount drawn under committed facility

1. Subsection (2) applies where–

   a. an amount has been drawn by an obligor under a committed facility; and

   b. the maturity of that drawn amount is less than the maturity of the facility

2. The maturity of the facility must be used for the **effective maturity** estimate of the drawn amount, up to a maximum of 5 years.

## C6.5 Effective maturity: netted derivatives

1. When determining **M** for **derivatives** that give rise to **CCR** against a given counterparty in terms of section C5.6 and that are subject to a master netting agreement, the bank must use the weighted average maturity of the **derivatives**.

2. In such cases, the notional amount of each derivative transaction must be used for the purpose of determining the weighted maturity.

## C6.6 Exemptions from one-year floor for capital market transactions

1. **Derivatives** and **SFTs** are exempt from the one-year maturity floor if–

   a. they have an **original maturity** of less than one year; and

   b. the relevant documentation–

      i. contains daily re-margining clauses; and

      ii. requires daily revaluation; and

      iii. allow for the prompt liquidation or set-off of collateral in the event of **default** or failure to re-margin.

2. If a bank has a transaction that is exempted under this section and that is not subject to a master netting agreement, the bank must calculate **M** for the transaction as the greater of one day and the **effective maturity** calculated in accordance with section C6.3(1).

3. Subsection (4) applies if–

   a. a bank has a number of transactions that meet the requirements of subsection (1); and

   b. those transactions are subject to a master netting agreement.

4. If the circumstances described in subsection (3) apply to a bank, the bank must calculate M for the net exposure amount as the weighted average of the effective maturities of the transactions, but subject to the following requirements:

   a. the effective maturity of each transaction included in the netting must be calculated in accordance with section C6.3(1); and

   b. the notional amount of each transaction must be used in determining the weighted average maturity; and

   c. the resulting **M** calculated for netted **derivatives** is subject to a floor of 10 business days; and

   d. the resulting **M** calculated for netted **SFTs** is subject to a floor of 5 business days; and

   e. if the netting set includes both **derivatives** and **SFTs**, the floor of 10 business days applies.

> Guidance: These floors correspond to the assumed minimum holding periods for such transactions for determining collateral haircuts, as set out in section B2.4 of BPR132.

## C6.7 Other exemptions from one-year floor

1. The following additional transaction types are exempt from the one-year floor referred to in section C6.2(3):

   a. short-term self-liquidating trade transactions (import and export letters of credit and similar transactions can be accounted for at their actual remaining maturity):

   b. exposures arising from settling securities purchases and sales, including overdrafts arising from failed securities settlements provided that such overdrafts do not continue for more than five consecutive business days:

   c. exposures arising from cash settlements by wire transfer, including overdrafts arising from failed transfers provided that such overdrafts do not continue for more than three consecutive business days:

   d. exposures to banks arising from failed foreign exchange settlements

   e. exposures arising from overnight placements with the bank's **ultimate parent bank**:

   f. **ESAS** balances.

2. The bank may calculate **M** for a transaction referred to in subsection (1) as the greater of one day and the **effective maturity** calculated in accordance with section C6.3(1).

3. Other short-term transactions with an **original maturity** of less than one year that are not part of the bank's ongoing financing of an obligor may be exempt from the one-year maturity floor if–

   a. the bank has policies detailing the transactions where the one-day maturity floor is appropriate; and

   b. those policies have been approved, in writing, by the Reserve Bank.

## C7 Calculation of R (Correlation)

### C7.1 Introduction

1. This subpart sets out alternative formulae that a bank must use in different circumstances to calculate the value of the correlation measure (R) to be used in the risk weight calculation for a corporate, **sovereign**, or bank counterparty.

2. In all cases the formula for R depends on the value of **PD** that the bank has estimated for the counterparty, including any adjustment to **PD** to take account of a guarantee or **credit derivative**.

### C7.2 Calculation of R: standard formula

1. Unless the exposure meets the conditions in either section C7.3 or C7.4, a bank must calculate correlation (R) using the following formula:

$$\text{Correlation (R)} = 0.12 \times \left(\frac{1-e^{-50\times PD}}{1-e^{-50}}\right) + 0.24 \times \left(1 - \left(\frac{1-e^{-50\times PD}}{1-e^{-50}}\right)\right)$$

2. If the exposure is of a kind specified in either section C7.3 or C7.4, the bank must adjust this formula in accordance with section C7.3 or C7.4 respectively.

### C7.3 Adjustment to R for asset value correlation multiplier (AVCM)

1. To determine R for an exposure to a **financial institution** meeting either of the following criteria, the bank must multiply the standard formula for R by the asset value correlation multiplier (**AVCM**) 1.25:

   a. the exposure is to a regulated **financial institution** whose total assets are greater than or equal to $120 billion, as disclosed in its most recent audited consolidated financial statements:

> Guidance: For the purpose of this section, a regulated **financial institution** is defined as a parent and its **subsidiaries** where any substantial legal entity in the consolidated group is supervised by a regulator that imposes prudential requirements consistent with international norms. These include, but are not limited to, prudentially regulated insurance companies, broker/dealers, banks, and **non-bank deposit takers**.

   b. the exposure is to an unregulated **financial institution**, regardless of its size.

> Guidance: For the purpose of this section, unregulated **financial institutions** are defined as legal entities whose main business includes: the management of

**financial assets**, lending, factoring, leasing, the provision of credit enhancements, securitisation, investments, financial custody, central counterparty services, proprietary trading and other financial services activities as determined by the Reserve Bank.

2. Where subsection (1) applies, the correlation parameter (R) is:

$$\text{Correlation (R)} = 1.25 \times \left[0.12 \times \left(\frac{1-e^{-50\times PD}}{1-e^{-50}}\right) + 0.24 \times \left(1 - \left(\frac{1-e^{-50\times PD}}{1-e^{-50}}\right)\right)\right]$$

### C7.4 Adjustment to R for firm size

1. The bank must make a firm-size adjustment to the formula for R in the case of a corporate exposure if–

   a. the counterparty is part of a consolidated group and the consolidated group meets the size test in subsection (2); and

   b. the exposure is not a farm lending exposure, as defined in section B1.9.

2. The size test referred to in subsection (1)(a) is that either–

   a. the reported consolidated annual sales of the group are less than $50 million; or

   b. if total sales is not a meaningful indicator of the group's size, the reported total assets of the group are less than $50 million.

3. The required formula for R including the firm-size adjustment is:

   Correlation (R) =

$$0.12 \times \left(\frac{1-e^{-50\times PD}}{1-e^{-50}}\right) + 0.24 \times \left(1 - \left(\frac{1-e^{-50\times PD}}{1-e^{-50}}\right)\right) - 0.04 \times \left(1 - \frac{S-5}{45}\right)$$

   where:

   S is Max (size indicator, 5); and

   size indicator is group total sales or group total assets, depending on which decides the size test in subsection (2), expressed as a multiple of $1 million.

Guidance: For example, if a counterparty's group sales total $12,782,000 and are a meaningful indicator of group size, then S = 12.782.

## C8 Calculation of risk-weighted assets (RWA)

### C8.1 Introduction

1. This subpart sets out the formulae that a bank must use for calculating the capital requirement (K) for an exposure in the corporate, **sovereign** or bank **IRB** exposure classes and hence for calculating the risk-weighted asset (**RWA**) value for the exposure in respect of unexpected losses.

2. However, this subpart does not apply where the exposure is a corporate specialised lending exposure for which the bank uses the supervisory slotting approach set out in subpart C9.

3. The formulae for K and **RWA** use the values of **PD**, **LGD**, **EAD**, M, and R for the exposure calculated in accordance with subparts C2 to C7.

4. When inserting values into the formulae, the **PD** and **LGD** percentages are expressed as decimals, and **EAD** is expressed in New Zealand dollars.

> Guidance: For example, 1% expressed as a decimal would be 0.01.

## C8.2 Calculation of capital requirement: non-defaulted exposures

1. For non-**defaulted** exposures in the corporate, **sovereign**, and bank exposure classes, the formula for calculating the capital requirement is:

Capital requirement (K) =

$$\left[LGD \times N\left[\left(\frac{1}{\sqrt{1-R}}\right) \times G(PD) + \left(\sqrt{\frac{R}{1-R}}\right) \times G(0.999)\right] - (PD \times LGD)\right] \times \frac{1 + b \times (M - 2.5)}{1 - (1.5 \times b)}$$

where $b = \left[0.11852 - \left(0.05478 \times \ln(PD)\right)\right]^2$

Guidance: For the purposes of this formula, "ln" denotes the natural logarithm and N(x) denotes the cumulative distribution function for a standard normal random variable (that is, the probability that a normal random variable with mean zero and variance of one is less than or equal to x). G(z) denotes the inverse cumulative distribution function for a standard normal random variable (that is, the value of x such that N(x) = z). The normal cumulative distribution function and the inverse of the normal cumulative distribution function are, for example, available in Excel as the functions NORMSDIST and NORMSINV.

2. If this calculation results in a negative capital charge for a **sovereign** exposure, a bank must apply a zero capital charge for that exposure.

## C8.3 Calculation of capital requirement: defaulted exposures

The capital requirement (K) in respect of **UL** for a **defaulted** exposure under the **IRB approach** is equal to the greater of zero and the amount by which the own estimate of **LGD** (expressed in percentage terms) exceeds the bank's best estimate of **EL** (expressed as a percentage of **EAD**) given current economic circumstances and the facility's status.

> Guidance: Expressed as a formula, **K** (defaulted) = Max [(**LGD** – **EL**/**EAD**), 0]. For an explanation of expected losses (EL) and how those losses are to be calculated, see Part F1.

## C8.4 Calculation of risk-weighted assets (RWA)

For both non-**defaulted** and **defaulted** exposures, risk-weighted assets (**RWA**) for unexpected losses (**UL**) are calculated as follows:

**RWA** = K x 12.5 x **EAD**.

## C9 Slotting approach for corporate specialised lending exposures: RWA and EL

### C9.1 Slotting into supervisory categories

1. If a specialised lending (**SL**) exposure (see sections B1.3 to B1.7) is not covered by an **IRB** model approval allowing the bank to use the general **IRB** corporate risk-weighting function in subpart 8, the bank must risk-weight the exposure using the supervisory slotting approach.

2. When the supervisory slotting approach is used, it must be used both for calculating **RWAs** for unexpected losses (**UL**) and for calculating expected losses (**EL**). This subpart sets out the method of calculation for both.

3. Where a bank's **IRB** approval requires it to use the supervisory slotting approach to risk-weight specified project finance, object finance, commodities finance, and/or income producing real estate (**IPRE**) exposures (as defined in sections B1.4 to B1.7), the bank must map its internal obligor grades for each such exposure to one of the following five supervisory slotting categories:

   a. strong:

   b. good:

   c. satisfactory:

   d. weak:

   e. default.

Guidance: The five slotting categories broadly correspond to external credit assessments as shown in the following table, the ratings being based on the Standard & Poor's rating scale:

| Supervisory category | External rating equivalent |
|---|---|
| Strong | BBB- or better |
| Good | BB+ or BB |
| Satisfactory | BB- or B+ |
| Weak | B to C- |
| Default | N/A |

4. The bank must base its mapping process on the criteria set out in the Appendix.

## C9.2 Determination of exposure amount

1. If the bank has a model approval in relation to a slotting exposure that includes an **EAD** methodology, the bank must use that methodology to determine the exposure amount for the risk-weighting calculation.

2. If the bank does not have an approved **EAD** method applicable to a slotting exposure, it must calculate the total credit equivalent amount of the exposure to reflect both on-balance sheet and off-balance sheet exposures, as follows—

   a. for an exposure recognised on the balance sheet, other than a **derivative** or **SFT**, the measure of exposure is the book value of the exposure before deducting any credit impairment allowance; and

   b. to calculate the credit equivalent amount of an off-balance sheet credit exposure arising from a contingent liability of one of the types listed in subsections C5.5(6) and (7), the bank must use the methodology in section C5.5, using the **CCFs** specified in Table C5.5; and

   c. to calculate the credit equivalent amount of the counterparty risk arising from a **derivative** or **SFT**, the bank must use the standardised approach set out in Part E of BPR131.

## C9.3 Slotting categories: RWAs for unexpected losses

A bank must calculate the **credit risk RWA** on an **SL** exposure subject to the slotting approach by multiplying the exposure amount determined under section C9.2 by the **UL** risk weight in Table C9.3 for the slotting category of the exposure determined under section C9.1.

***Table C9.3***

***UL risk weights for slotting categories***

| Supervisory category | Strong | Good | Satisfactory | Weak | Default |
|---|---|---|---|---|---|
| UL risk weight | 70% | 90% | 115% | 250% | 0% |

## C9.4 Slotting categories: expected losses

A bank must calculate the expected loss (**EL**) on an **SL** exposure subject to the slotting approach as 8% of the exposure amount determined under section C9.2, multiplied by the **EL** risk weight in Table C9.4 for the slotting category of the exposure determined under section C9.1.

Guidance: The formula for this calculation is: **EL** = 8% x {**EL** risk weight} x {exposure amount}.

***Table C9.4***

***EL risk weights for slotting categories***

| Supervisory category | Strong | Good | Satisfactory | Weak | Default |
|---|---|---|---|---|---|
| EL risk weight | 5% | 10% | 35% | 100% | 625% |

Guidance: For the calculation of expected losses (**EL**) for other exposure categories, and the requirements for adjusting regulatory capital to take account of **EL** across all exposure categories, see subpart F1.

# Part D: Retail Exposures

## D1 Introduction

### D1.1 Overview of retail IRB requirements

1. (This Part sets out the method of calculating the minimum capital requirement for unexpected loss (**UL**), and the corresponding **credit risk RWAs**, for the retail **IRB** exposure class.

2. For the retail IRB exposure class, own estimates of **probability of default** (**PD**), of **loss given default** (**LGD**), and of **exposure at default** (**EAD**) must be provided for each identified pool of retail exposures.

3. Subparts D2 to D5 set out the **credit risk** components that serve as inputs into the **IRB** risk-weight functions for the retail **IRB** exposure class.

4. Subpart D6 sets out the **IRB** risk-weight functions for the retail **IRB** exposure class, which determine the capital requirement for **UL** for those exposures.

5. There is no explicit maturity adjustment for the retail **IRB** exposure class.

### D1.2 Treatment of leases provided by bank

1. Where the bank has provided lease financing to a counterparty within the retail exposure class the **credit risk RWA** must, unless the bank is exposed to **residual value risk** (in which case subsection (2) applies)), be calculated using the method in this part, treating the lease as an exposure to the lessee secured by the relevant collateral.

2. The bank as lessor must treat any lease that exposes it to **residual value risk** as follows:

    a. the discounted lease payment stream must be risk-weighted according to the **probability of default** (**PD**) and **loss given default** (**LGD**) assigned to the lessee; and

    b. the residual value is subject to the standardised risk-weighting treatment provided in section C2.17 of BPR131 and risk-weighted at 100%.

3. For the purpose of this section, **residual value risk** is the bank's exposure to potential loss due to the fair value of the equipment declining below its residual estimate at lease inception.

## D2 Estimation of PD

### D2.1 Minimum requirements for PD estimates

The minimum requirements for the derivation of **PD** estimates associated with each identified pool of retail exposures are detailed in subpart E5 of BPR134.

### D2.2 Calculation of PD

1. The **PD** assigned to each pool of retail exposures is the greater of 0.03% and the long-run average one-year **PD** associated with the internal obligor grade to which the pool of retail exposures is assigned.

2. A 100% PD must be assigned to **default** grades, applying the definition of **default** in Part E2 of BPR134.

# D3 Estimation of LGD

## D3.1 Minimum requirements for LGD estimates

The minimum requirements for the derivation of **LGD** estimates associated with each identified pool of retail exposures are as provided for in subpart E6 of BPR134.

## D3.2 LGD requirements

1. **LGD** estimates must be measured as a percentage of **EAD**.
2. Own estimates of **LGD** may be used for retail exposures, but only if the Reserve Bank has approved that approach.
3. The bank must, if it does not do so via **EAD**, reflect in **LGD** the likelihood of future drawdown on retail exposures with uncertain future drawdown (see section D5.5(4)(b)).
4. However, if Reserve Bank approval has not been obtained to use own estimates of **LGD** for exposures secured by mortgages over residential property, the minimum **LGD** requirements must be applied that correspond to different levels of loan-to-valuation ratio (LVR) as set out in Table D3.2.
5. For the purpose of this section, the LVR must be calculated in accordance with section D3.3.

***Table D3.2***

***Minimum LGD for residential mortgage loans***

| LVR | LGD *Non property-investment residential mortgage loan* | LGD *Property-investment residential mortgage loan* |
|---|---|---|
| 90% and over | 38.00% | 40.00% |
| 80-89% | 33.25% | 35.50% |
| 70-79% | 28.50% | 31.00% |
| 60-69% | 19.00% | 21.50% |
| Under 60% | 10.00% | 12.50% |

## D3.3 Calculation of loan-to-valuation ratio (LVR)

1. Subject to subsection (2), the loan-to-valuation ratio (LVR) for a **residential mortgage loan** is calculated by the following formula:

$$\textit{Loan-to-valuation ratio} = \frac{\text{loan value}}{\text{property value}} \times 100$$

For the purposes of the formula—

loan value is the total current amount of:

a. all claims secured by way of first ranking mortgage over residential property; and

b. the EAD amount of any off-balance sheet exposures secured by way of first ranking mortgage over residential property and consistent with section D5.5

Guidance: Lending facilities that are not tied to, nor managed as part of, the **residential mortgage loan**, and that are not normally treated as secured over the residential property (such as credit cards or personal loans), do not need to be included in the LVR calculation.

property value for a **standard residential mortgage loan** is the total value of the residential property that is security for the loan determined, when the loan is originated, under a residential property valuation policy that meets the eligibility criteria in section D3.4.

2. If the property value for a **residential mortgage loan** has not been determined in accordance with subsection (1), the LVR of the loan must, for the purposes of section D3.2, be treated as 150%.

Guidance: A **reverse residential mortgage loan** must be risk-weighted using the standardised approach specified in section C3.10 of BPR131, which includes the LVR definition for such loans.

## D3.4 Requirements for residential property valuation policy

To be eligible for use in calculating LVRs, a bank's residential property valuation policy must–

a. be approved by the bank's board of directors; and

b. require that, for the purpose of calculating the LVR for a loan secured by a mortgage over a residential property, the bank uses one of the following methods of valuation:

   i. the purchase price of the property; or

   ii. a property valuation provided by a valuer who meets the conditions in section D3.5 and who is not associated with a person who has an interest in the property; or

   iii. a property valuation that is provided by a professional valuation service and meets the conditions in section D3.6; and

c. include guidance on the appropriate **credit risk**-related use of different valuation products; and

d. include guidance on the use of the purchase price of a residential property; and

e. include guidance on the determination of the origination date; and

f. ensure that its application is invariant to the direction of the movement of residential property prices.

Guidance: The conditions set out in this section are the same as the conditions applying to residential property valuation policies for standardised **credit risk**

**RWAs**, except that under the standardised approach, a further condition specific to reverse mortgage loans is included (see section C3.6 of BPR131).

## D3.5 Eligible property valuer

The eligibility criteria for a property valuer referred to in section D3.4(b)(ii) are that the valuer is–

a. a registered valuer, as defined in the Valuers Act 1948; or

b. a person approved to provide valuation services by rules made under the Rating Valuations Act 1998; or

c. a person who meets the definition of valuer under the laws of another country, provided that the Reserve Bank has confirmed, in writing, to the that it considers the laws of the other country to be at least as satisfactory as the requirements under the Valuers Act 1948.

## D3.6 Valuation provided by professional valuation service

To be eligible for use in calculating an LVR, a property valuation provide by a professional valuation service must be either–

a. a statistical or modelled valuation based on market sales price data; or

b. a valuation carried out by appropriately qualified valuation personnel overseen by a valuer who meets the conditions in section D3.5, and who is not associated with a person who as an interest in the property.

## D3.7 Recognition of credit risk mitigation in LGD

1. If a bank holds collateral against an exposure, the bank may recognise the **credit risk** mitigation benefit of the collateral in its own estimation approach to **LGD**.

2. If a bank holds an eligible guarantee or **credit derivative** to mitigate the **credit risk** of all or part of an exposure, the bank may adjust the calculation of **LGD** for that exposure as provided for in subpart D4.

3. However, subsections (1) and (2) are subject to subsection (4).

4. If the bank is subject to the minimum **LGD** for a **residential mortgage loan** under section D3.2(4), the bank must not directly recognise any other collateral, guarantee, or **credit derivative** in its calculation of **LGD**.

Guidance: If a **residential mortgage loan** has **credit risk** mitigation in place that has the effect of adding additional property to the loan security eligible for inclusion in the LVR calculation, LVR will be reduced which may lead to a lower minimum value of **LGD**.

## D4 Guarantees and credit derivatives

### D4.1 Recognition of guarantees and credit derivatives in PD or LGD

1. The risk-mitigating effect of a guarantee or **credit derivative**, either in support of an individual retail obligation or a pool of retail exposures, may be reflected through an adjustment to either **PD** or **LGD**, provided that the credit protection provider is also subject to an **IRB** model.

2. The general provisions applying to the recognition of guarantees and **credit derivatives** for banks using the **IRB approach** are set out in subpart D2 of BPR132.

3. That subpart also includes cross-references to subpart D1 of BPR132, which also applies to banks using the standardised approach.

4. Banks using the **IRB approach** must comply with all requirements that apply to **IRB banks**, as provided for in those Parts.

> Guidance: Where the bank intends to recognise a guarantee or **credit derivative** provided by a credit protection provider that is subject to the standardised approach, it must use a fully standardised **RWA** calculation for the exposure, in accordance with BPR131 and subpart D1 of BPR132. This is required by section C1.2(2)(c) of BPR130.

## D5 Estimation of EAD

### D5.1 Minimum requirements for EAD estimates

The minimum requirements for the derivation of **EAD** estimates associated with each identified pool of retail exposures are detailed in subpart E7 of BPR134: **IRB** Minimum System Requirements.

### D5.2 EAD to be measured gross

The bank must measure **EAD** in respect of each retail exposure (both on- and off-balance sheet) gross of allowances for impairment and partial write-offs.

### D5.3 On-balance sheet exposures

The bank must estimate **EAD** for on-balance sheet retail exposures using the same methodology that applies to the corporate, **sovereign**, and bank exposure classes, as set out in section C5.3.

### D5.4 Netting: on-balance sheet exposures

When estimating **EAD** for a retail customer, the bank may net loans to, and deposits from, the customer, provided that the bank uses the approach, and satisfies the conditions, for on-balance sheet netting set out in Part C of BPR 132.

### D5.5 Off-balance sheet exposures on contingent liabilities

1. (A bank must calculate the **EAD** for the off-balance sheet exposure arising on a contingent liability as the notional amount of the exposure multiplied by a credit conversion factor (**CCF**).

Guidance: The contingent liabilities covered here include any of the transaction types listed in section C5.5(6) and (7) that the bank undertakes with a counterparty in the retail exposure class.

2. For the purposes of carrying out the calculation in subsection (1), the bank must use a notional exposure amount that–

   a. is the gross exposure before taking account of any provisions for expected credit losses or partial write-offs; and

   b. in the case of a commitment, is the undrawn amount on the commitment.

Guidance: Any amount that a borrower has drawn down under a commitment must be treated as an on-balance sheet exposure in accordance with section D5.3.

3. The bank may, subject to meeting the minimum requirements specified in subpart E7 of BPR134, use its own estimates of **CCFs** for off-balance sheet retail exposures.

4. For retail exposures with uncertain future drawdown, the bank must,–

   a. in the overall calibration of loss estimates, take account of the history of, and expectations of, additional drawings prior to **default**; and

   b. reflect the likelihood of additional drawings on undrawn lines prior to **default** either–

      i. in its **EAD** estimates using **CCFs**; or

      ii. in its **LGD** estimates.

Guidance: A credit card facility is an example of a product with uncertain future drawdown.

5. Where the drawn balances of retail exposures are securitised and given off-balance sheet treatment for capital adequacy purposes, regulatory capital must continue to be held against any undrawn balances related to the exposures using the **IRB approach** to **credit risk**.

## D5.6 Exposure measurement for counterparty credit risk

A bank must determine **EAD** for the counterparty **credit risk** on any derivative or **securities financing transaction** (**SFT**) with a retail counterparty in accordance with Part E of BPR131.

Guidance: In the event that a bank has any derivatives or **securities financing transactions** with retail customers, it must calculate credit equivalent amounts using the standardised methodology.

# D6 Calculation of risk-weighted assets (RWA)

## D6.1 Risk-weighted assets (RWA) for retail IRB exposure class

1. This subpart specifies the separate **IRB** risk-weight functions to be used for the two retail exposure sub-classes, namely–

   a. the residential mortgage exposure sub-class (excluding **reverse residential mortgage loans**):

   b. the other retail exposure sub-class.

> Guidance: A standardised risk-weight calculation applies to **reverse residential mortgage loans**, and the approach is set out in section C3.10 of BPR131.

2. **Defaulted** retail exposures are dealt with in section D6.4.

3. For the purposes of sections D6.2 to D6.4,–

   a. **PD** and **LGD** are measured as decimals; and

   b. **EAD** is measured in New Zealand dollars.

## D6.2 Residential mortgage exposures

1. For a non-**defaulted** **standard residential mortgage loan**, the formula for calculating the risk-weighted asset is as follows:

   RWA =

   Capital requirement (K) =

$$LGD \times N\left[\left(\frac{1}{\sqrt{(1-R)}} \times G(PD)\right) + \sqrt{\left(\frac{R}{1-R}\right)} \times G(0.999)\right] - (PD \times LGD)$$

> Guidance: For the purposes of this formula, N(x) denotes the cumulative distribution function for a standard normal random variable (that is, the probability that a normal random variable with mean zero and variance of one is less than or equal to x). G(z) denotes the inverse cumulative distribution function for a standard normal random variable (that is, the value of x such that N(x) = z). The normal cumulative distribution function and the inverse of the normal cumulative distribution function are, for example, available in Excel as the functions NORMSDIST and NORMSINV.
>
> The residential mortgage risk-weight function applies to both the secured and unsecured portion of such residential mortgages.

2. For the purposes of subsection (1), Correlation (R) is determined by the loan-to-value ratio (LVR) of the residential mortgage exposure in accordance with Table D6.2.

*Table D6.2*

***Correlation for residential mortgage loans***

| LVR | Correlation (R) *Non property-investment residential mortgage loan* | Correlation (R) *Property-investment residential mortgage loan* |
|---|---|---|
| 90% and over | 0.21 | 0.24 |
| 80 - 89% | 0.20 | 0.23 |
| Under 80% | 0.15 | 0.17 |

## D6.3 Other retail exposures

For all other non-**defaulted** retail exposures falling within sections B4.3 to B4.5, the formula for calculating risk-weighted assets is as follows:

$$\text{RWA} = K \times 12.5 \times EAD$$

Capital requirement (K) =

$$LGD \times N\left[\left(\frac{1}{\sqrt{(1-R)}} \times G(PD)\right) + \sqrt{\left(\frac{R}{1-R}\right)} \times G(0.999)\right] - (PD \times LGD)$$

Correlation (R) = $0.03 \times \left(\frac{1-e^{-35\times PD}}{1-e^{-35}}\right) + 0.16 \times \left(1 - \left(\frac{1-e^{-35\times PD}}{1-e^{-35}}\right)\right)$

## D6.4 Defaulted exposures

1. For a **defaulted IRB** retail exposure, the formula for calculating risk-weighted assets (**RWA**) for unexpected losses (**UL**) is as follows:

$$\text{RWA} = \text{K} \times 12.5 \times \textbf{EAD}.$$

The capital requirement (K) in subsection (1) is equal to the greater of zero and the amount by which the own estimate of **LGD** (expressed in percentage terms) exceeds the bank's best estimate of **EL** (expressed as a percentage of **EAD**) given current economic circumstances and the facility's status.

Guidance: Expressed as a formula, K (defaulted) = Max [(**LGD** – **EL**/**EAD**), 0]. For the method of calculating expected losses (**EL**) and how those losses are to be included in the calculation of the bank's capital, see subpart F1.

# Part E: Purchased receivables

## E1 Introduction

### E1.1 Overview of Part

1. This Part sets out the method for calculating the unexpected loss (**UL**) capital requirement for purchased receivables.

2. For these exposures, there are **UL** capital charges for both **credit risk** and **dilution risk**.

3. The treatment of expected losses (**EL**) for purchased receivables is the same as that for corporate and retail exposures, as provided for in Part F.

### E1.2 Types of purchased receivables

1. The treatment of purchased receivables straddles two internal ratings-based (**IRB**) exposure classes, namely purchased receivables falling within–

   a. the retail **IRB** exposure class; and

   b. the corporate **IRB** exposure class.

2. Purchased receivables falling within the retail **IRB** exposure class are pools of receivables that have been purchased where the underlying receivables meet the definition of retail exposures in Part B4; and

3. Purchased receivables falling within the corporate **IRB** exposure class are pools of receivables that have been purchased where the underlying receivables meet the definition of corporate exposures in section B1.1.

### E1.3 Minimum requirements for risk quantification

1. This section sets out minimum requirements for risk quantification that a bank must meet when it is applying the **IRB** top-down approach for **credit risk** to corporate or retail purchased receivables specified in Parts E2 and E3, or the **IRB approach** to **dilution risk** on purchased receivables specified in Part E4.

2. The purchasing bank must group the receivables into pools that are sufficiently homogeneous to enable it to determine accurate and consistent estimates of **PD** and **LGD** for default losses (or of **EL**, if **PD** and **LGD** are not separately estimated), and **EL** estimates for dilution losses.

3. The risk-bucketing process must reflect the seller's underwriting practices and the heterogeneity of its customers.

4. The bank's methods and data for estimating **PD**, **LGD**, and **EL** must comply with the risk-quantification standards for retail exposures set out in Part E of BPR134 and, in particular, the quantification must reflect all information available to the purchasing bank regarding the quality of the underlying receivables, including data for similar pools provided by the seller, by the purchasing bank, or by external sources.

5. The purchasing bank must determine whether the data provided by the seller are consistent with expectations agreed upon by both parties concerning, for example, the type, volume, and on-going quality of receivables purchased. If the data are not consistent with those expectations, the purchasing bank must obtain and rely upon more relevant data.

## E2 Credit risk: purchased retail receivables

### E2.1 Calculation of capital requirement

The calculation of the capital requirement for **credit risk** for purchased retail receivables is the same as that for the general retail **IRB** exposure class, as specified in Part D.

### E2.2 Requirements for PD and LGD estimates

1. When estimating **probability of default** (**PD**) and **loss given default** (**LGD**) for purchased retail receivables, the bank may use external or internal reference data.

2. However, for each of the homogeneous risk buckets into which a pool is segmented, the bank must determine these estimates on a stand-alone basis, without regard to any assumption of recourse to, or guarantees from, the seller or other parties.

### E2.3 Risk-weight function to be used

For purchased receivables belonging to a particular retail exposure sub-class, the bank must calculate the risk-weight for **credit risk** using the risk-weight function applicable to that exposure sub-class, provided that the receivables meet the qualifying criteria for using the relevant risk-weight function.

> Guidance: The retail exposure sub-classes are defined in Part B4 and the retail risk-weight functions are set out in Part D6.

### E2.4 Hybrid pools

For hybrid pools containing receivables belonging to more than one retail exposure sub-class, the bank must, if the exposures cannot be separated by type of retail exposure sub-class, use the risk-weight function that produces the highest minimum capital requirement at each **PD** level.

## E3 Credit risk: purchased corporate receivables

### E3.1 Alternative approaches for calculating credit risk RWAs

1. If the minimum criteria specified in subsection (2) are met, the bank may use the top-down approach, otherwise the bank must use the approach specified in subsection (3).

2. The bank may use the top-down approach set out in this subpart if–

   a. the pool of receivables meets the minimum criteria in section E3.3; and

   b. the bank meets the minimum operational requirements set out in subpart E8 of BPR134.

3. If the bank is not able to use the top-down approach, it must calculate the **credit risk** **RWA** for each corporate obligor within the pool using the general **IRB** treatment for corporate exposures, as provided for in Part C.

## E3.2 Limitations on use of top-down approach

1. The use of the top-down approach for **credit risk** for purchased corporate receivables is limited to situations where it would be an undue burden on the bank to be subject to the minimum requirements for the **IRB approach** to corporate exposures that would otherwise apply.

2. The approach is limited to corporate receivables that are purchased for inclusion in asset-backed securitisation structures.

3. The use of the top-down approach is subject to approval, in writing, from the Reserve Bank.

## E3.3 Eligibility for top-down treatment

1. To be eligible for the top-down treatment, purchased corporate receivables must satisfy the following conditions:

   a. the corporate receivables must have been purchased from unrelated **third-party** sellers; and

   b. the bank must have had no involvement, whether direct or indirect, in originating the receivables; and

   c. the receivables must have been generated on an arms-length basis between the seller and the obligor; and

   Guidance: This means that inter-company accounts receivable are ineligible, as are receivables subject to contra-accounts between firms that buy and sell amongst each other. Contra-accounts involve a customer buying from and selling to the same firm. The risk is that debts may be settled through payments in kind rather than cash. Invoices between the companies may be offset against each other instead of being paid. This practice may defeat a security interest when challenged in court.

   d. the bank must have a claim on all proceeds from the pool of corporate receivables, or a pro-rata interest in the proceeds commensurate with its exposure to the pool; and

   e. the maximum size of individual exposures in the pool of purchased corporate receivables must be less than $100,000.

2. The existence of full or partial recourse to the seller does not automatically disqualify adoption of a top-down approach, provided that the cash flows from the purchased corporate receivables are the primary protection against **credit risk**.

## E3.4 Methodology for top-down approach

1. The bank must calculate the capital requirement (K) for each of the homogeneous segmented pools of purchased corporate receivables using the risk-weight function for corporate exposures set out in Part C8.

2. For each pool, the bank must estimate the inputs **PD** and **LGD** to the risk-weight function in accordance with section E3.5 and calculate the input **M** in accordance with section E3.7.

3. If the requirements in subsection (4) are met, the bank must calculate correlation (R) using the firm-size adjusted R specified in section C7.4, otherwise the bank must use the standard formula for R, calculated in accordance with section C7.2.

4. The bank may use the firm-size adjusted R only if–

   a. the bank has sufficient information to enable it to calculate the exposure-weighted average of the relevant size measures across the individual exposures in the pool; and

   b. that average meets the criterion for the firm-size adjustment.

5. The bank must calculate **EAD** for each pool in accordance with section E3.6.

6. Risk-weighted assets (RWA) for unexpected losses (**UL**) for each pool of purchased corporate receivables under the top-down approach are calculated as follows:

$$RWA = K \times 12.5 \times EAD.$$

## E3.5 PD and LGD estimates

1. The bank must estimate **PD** and **LGD** for each of the homogeneous segmented pools of purchased corporate receivables.

> Guidance: The bank may use both internal and external data to estimate **PD** and **LGD**.

2. If, for a given pool, the bank is only able to reliably estimate one of either average **PD** or **default**-weighted average **LGD**, the bank may base the other required **credit risk** component on an estimate of the expected long-run average one-year loss rate of the segmented pool.

3. For the purpose of subsection (2), the bank must–

   a. estimate the loss rate of the pool on a stand-alone basis; and

> Guidance: A stand-alone basis means not assuming recourse to, or guarantees from, the seller or other parties.

   b. must express the loss rate as a percentage of the total **EAD** for all obligors in the pool.

> Guidance: The treatment of recourse or guarantees covering **credit risk** and/or **dilution risk** is dealt with in Part E5.

4. On the basis that (expected loss rate) = **PD** x **LGD**, the bank may either–

   a. use its **PD** estimate to infer the **LGD**; or

   b. use its **LGD** estimate to infer the **PD**.

5. However, in either case, the **LGD** must not be less than the long-run **default**-weighted average **LGD**.

### E3.6 EAD estimates

1. The bank must calculate **EAD** for each segmented pool as the gross exposure amount specified in subsection (2), less the **RWAs** for **dilution risk** for the pool calculated under Part E4.

> Guidance: **EAD** is therefore the gross exposure amount defined in subsection (2), multiplied by (100% - [12.5 x $K_{dilution}$]), where $K_{dilution}$ is the dilution capital requirement for the pool calculated under Part E4. The **dilution risk** deduction is the amount before taking account of any risk mitigation applied to the **dilution risk**.

2. The gross exposure amount referred to in subsection (1) is either–

   a. the amount outstanding for the pool; or

   b. in the case of a revolving purchase facility, the sum of the current amount of receivables purchased plus 75% of any undrawn purchase commitments.

> Guidance: This is in contrast to the general corporate approach, because in the top-down approach for purchased corporate receivables, a bank must not use internal **EAD** estimates for undrawn purchase commitments.

### E3.7 Calculation of effective maturity (M)

1. The bank must calculate **effective maturity** (**M**) for drawn amounts in a pool as the pool's exposure-weighted average **effective maturity**, as defined in Part C6.

2. The bank must also use the method specified in subsection (1) to calculate **M** for any undrawn amounts under a committed purchase facility, provided that the facility contains effective covenants, early amortisation triggers, or other features that protect the bank against a significant deterioration in the quality of the future receivables it is required to purchase over the facility's term.

3. If a committed purchase facility does not contain the protections set out in subsection (2), the bank must calculate **M** for undrawn amounts under the facility as the sum of–

   a. the longest-dated potential receivable under the purchase agreement; and

   b. the remaining maturity of the purchase facility.

## E4 Dilution risk

### E4.1 Meaning of dilution risk

**Dilution risk** refers to the possibility that the total amount of purchased receivables is reduced through cash or non-cash credits to the receivables' obligors.

> Guidance: Examples include offsets or allowances arising from returns of goods sold, disputes regarding product quality, possible debts of the obligor to a receivables obligor, and any payment or promotional discounts offered by the obligor (for example, a credit for cash payments within 30 days).

## E4.2 Capital requirement for dilution risk

Unless **dilution risk** is immaterial, the bank must calculate a capital requirement for **dilution risk** for purchased receivables, whether the underlying exposures are retail or corporate, and whether the bank uses the top-down approach or the individual exposure approach for corporate purchased receivables.

## E4.3 Calculation of capital requirement for dilution risk ($K_{dilution}$)

1. For either a segmented pool of purchased receivables or for an individual receivable belonging to a pool of corporate purchased receivables, the bank must calculate the capital requirement for **dilution risk** ($K_{dilution}$) using the **IRB** corporate risk-weight function in section C8.2, with input variables determined in accordance with subsections (2) and (3).

2. For the purposes of the calculation required under subsection (1), the bank must–

   a. set **PD** at its estimate of the expected long-run average one year loss rate for **dilution risk** and, in relation to that loss rate, the bank–

      i. may use external or internal reference data to estimate the loss rate; and

      ii. must estimate the loss rate on a stand-alone basis; and

   Guidance: This means that the bank must not assume recourse to, or guarantees from, the seller or other parties.

      iii. must express the loss rate as a percentage of the total **EAD** for all obligors in the pool, or for the individual exposure, as applicable; and

   b. set **LGD** to 100%; and

   c. calculate R using the standard formula set out in section C7.2; and

   d. subject to subsection (3), use an appropriate **effective maturity** (**M**).

3. Despite subsection (2)(d), if the bank demonstrates that it is monitoring and managing the **dilution risk** in such a way that it can resolve the risk within one year of acquiring the purchased receivables, the Reserve Bank may grant an approval, in writing, permitting calculations to be based on a one-year **effective maturity** assumption.

## E4.4 EAD and RWAs for dilution risk

1. For calculating the **RWAs** for **dilution risk**, the bank must calculate **EAD** as follows:

   a. for purchased retail receivables, the bank must use the **EAD** applicable under the retail approach in Part D5; and

   b. for purchased corporate receivables on the stand-alone approach, the bank must use the **EAD** applicable under the corporate approach in Part C5; and

   c. for a pool of purchased corporate receivables under the top-down approach, the bank must use the gross exposure amount specified in section E3.6(2).

2. The bank must calculate risk-weighted assets for **dilution risk** in accordance with the following formula:

$$RWA = 12.5 \times \textbf{EAD} \times K_{dilution}$$

Guidance: **Dilution risk** **RWAs** represent the expected reduction of the exposure amount of a pool through dilution. The **credit risk** capital requirement for a pool is calculated on the basis of the exposure amount remaining after the expected dilution. Hence, the **EAD** for the top-down approach (see section E3.6) is the amount after deducting **dilution risk** **RWAs**.

## E5 Recognition of guarantees

### E5.1 Overview

The bank may recognise the benefit of guarantees in calculating the capital requirements for purchased receivables in the same manner as for guarantees applying to other exposures under the **IRB approach**.

Guidance: Subparts C4 and D4 specify the treatment of guarantees for corporate and retail exposures, respectively. Those parts refer to the detailed methodology for guarantees which is set out in Part D of BPR132.

### E5.2 Guarantees covering credit risk or dilution risk

1. The **IRB** methodology for recognising guarantees may be applied to guarantees provided by the seller or a **third party** regardless of whether the guarantee covers **credit risk**, **dilution risk**, or both.

2. If the guarantee covers a pool's **credit risk** and dilution risk, the risk-weight for an exposure to the guarantor may be substituted in place of the relevant pool's total risk-weight for **default** and **dilution risks**.

3. If the guarantee covers only one of either **credit risk** or **dilution risk**,–

   a. the risk-weight for an exposure to the guarantor may be substituted in place of the relevant pool's risk-weight for the corresponding risk component; and

   b. the capital requirement for the non-guaranteed component must then be added.

4. If a guarantee covers only a portion of the **default** and/or **dilution risk** of a relevant pool, the uncovered portion must be treated using the rules for proportional or tranched cover.

# Part F: Expected losses and eligible allowances

## F1 Expected losses (EL) and recognition of eligible allowances

### F1.1 Introduction

1. This Part sets out the method for calculating expected losses (**EL**), and provides a definition of eligible impairment allowances, that a bank must apply to all exposures that fall within a **modelled exposure class** and for which the bank uses an accredited **IRB** model.

> Guidance: The **modelled exposure classes** applying at any given time are specified in BPR130.

2. The calculated **EL**, offset by the eligible impairment allowances, is used to adjust regulatory capital as set out in section F1.5.

3. The treatment of **EL** and impairment allowances set out in this Part does not apply to **non-modelled exposure classes**, to securitisation exposures, or to any exposures for which the bank uses the standardised **credit risk** approach.

4. To determine eligible allowances, the bank must exclude a part of its collective credit impairment allowance in proportion to the amount of exposures that it risk-weights using the standardised approach, as specified in section F1.4.

> Guidance: Purchased receivables fall within either the corporate or retail exposure classes, and hence are subject to the EL treatment set out in this Part.

### F1.2 Calculation of expected losses

1. Subject to subsection (2), **EL** for an exposure described in section F1.1 is calculated as follows:

   a. for a non-**defaulted** exposure, **EL** = **PD** x **LGD** x **EAD**:

   b. for a **defaulted** exposure, **EL** is the best estimate of expected loss given current economic circumstances and the facility's status.

2. For a corporate **SL** exposure subject to the supervisory slotting approach (whether **defaulted** or non-**defaulted**), **EL** must be calculated using the approach set out in Part C9.

### F1.3 Eligible allowances for impairment

For any exposures described in section F1.1 (including **SL** exposures), total eligible allowances for impairment associated with those exposures are–

a. credit-related allowances for impairment (for example, individual credit impairment allowances and collective credit impairment allowances); and

b. partial write-offs; and

c. discounts on **defaulted** exposures.

Guidance: For the meaning of "discount", see section C5.3(2).

## F1.4 Removal of collective impairment allowances on standardised exposures

1. The bank must use the method set out in subsections (2) to (4) for attributing part of its collective credit impairment allowances to those credit exposures that it risk-weights using the standardised approach in BPR131, and must exclude that part of its collective credit impairment allowances from eligible allowances.

2. The bank must attribute its total collective credit impairment allowance to standardised credit exposures on a pro-rata basis, according to the proportion of its total **credit risk RWAs** that are subject to the standardised approach.

3. However, when the standardised approach for **credit risk RWAs** is used exclusively by an entity within the banking group, all of the collective credit impairment allowances booked within that entity must be attributed to the standardised approach.

4. Collective credit impairment allowances booked by an entity within the **banking group** that exclusively uses the **IRB approach** to calculate **credit risk RWAs** qualify in full as eligible allowances for impairment for the purposes of section F1.3.

## F1.5 Adjustments to regulatory capital

1. The bank must deduct each of the following amounts, if positive, from **CET1 capital**:

   a. **EL** minus eligible allowances, calculated across all non-**defaulted** exposures; and

   b. **EL** minus eligible allowances, calculated across all **defaulted** exposures.

2. The amount of the difference to be deducted under subsection (1) is the full amount of the difference, and must not be reduced by any tax effects that could be expected to occur if provisions were to rise to the level of expected losses.

3. The bank may add the amount specified in subsection (4)(a), if positive, to **Tier 2 capital**, subject to the limit specified in subsection (4)(b).

4. The amount and limit referred to in subsection (3) are–

   a. eligible allowances minus EL, calculated across all non-**defaulted** exposures; and

   b. the maximum amount that the bank may add to **Tier 2 capital** under this section is 0.6% of the total of **credit risk RWAs** that the bank calculates using the **IRB approach**.

Guidance: For the purposes of this section, EL and eligible allowances must be calculated in accordance with sections F1.2 and F1.3 respectively. If any part of a bank's collective credit impairment allowance does not apply definitively to either non-**defaulted** or **defaulted** exposures, the bank should, for the purpose of this section, allocate the unallocated part in proportion to the respective dollar values of its non-**defaulted** and **defaulted** exposures.

# Appendix

## Supervisory slotting

***Table 1: Supervisory rating grades for project finance exposures***

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Financial strength | | | | |
| Market conditions | There are few competing suppliers or there is a substantial and durable advantage in location, cost or technology. Demand is strong and growing. | There are few competing suppliers or there is a better than average location, cost or technology but this situation may not last. Demand is strong and stable. | The project has no advantage in location, cost or technology. Demand is adequate and stable. | The project has worse than average location, cost or technology. Demand is weak and declining. |
| Financial ratios (e.g. debt service coverage ratio (DSCR), loan life coverage ratio (LLCR), project life coverage ratio (PLCR) and debt-to-equity ratio) | The project has strong financial ratios considering the level of project risk and very robust economic assumptions. | The project has strong to acceptable financial ratios considering the level of project risk and robust project economic assumptions. | The project has standard financial ratios considering the level of project risk. | The project has aggressive financial ratios considering the level of project risk. |
| Stress analysis | The project can meet its financial obligations under sustained severely stressed economic or sectoral conditions. | The project can meet its financial obligations under stressed economic or sectoral conditions. The project is only likely to default under severe economic conditions. | The project is vulnerable to stresses that are not uncommon through an economic cycle and may default in a normal downturn. | The project is likely to default unless conditions improve soon. |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| **Financial structure** | | | | |
| Duration of the credit compared to the duration of the project | The useful life of the project significantly exceeds the tenor of the loan. | The useful life of the project exceeds the tenor of the loan. | The useful life of the project exceeds the tenor of the loan. | The useful life of the project may not exceed the tenor of the loan. |
| Amortisation schedule | Amortising debt. | Amortising debt. | Amortising debt repayments with limited balloon payment. | Bullet payment or amortising debt with high balloon repayment. |
| **Political and legal environment** | | | | |
| Political risk, including transfer risk, considering project type and mitigants | The project has very low exposure; there are strong mitigation instruments, if needed. | The project has low exposure; there are satisfactory mitigation instruments, if needed. | The project has moderate exposure; there are fair mitigation instruments. | The project has high exposure; the mitigation instruments are weak or there are none. |
| Force majeure risk (war, civil unrest, etc) | Low exposure. | Acceptable exposure. | Standard protection. | There are significant risks which are not fully mitigated. |
| Government support and project's importance for the country over the long term | The project is of strategic importance for the country (preferably export-oriented). It has strong support from the government. | The project is considered important for the country. It has a good level of support from the government. | The project may not be strategic but brings unquestionable benefits for the country. Government support may not be explicit. | The project is not key to the country. The support from the government, if any, is weak. |
| Stability of legal and regulatory environment (risk of change in law) | The regulatory environment is favourable and stable over the long term. | The regulatory environment is favourable and stable over the medium term. | Regulatory changes can be predicted with a fair level of certainty. | Current or future regulatory issues may affect the project. |
| Acquisition of all necessary supports and approvals for such relief from local content laws | Strong. | Satisfactory. | Fair. | Weak |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Enforceability of contracts, collateral and security | Contracts, collateral and security are enforceable. | Contracts, collateral and security are enforceable. | Contracts, collateral and security are considered enforceable even if certain non-key issues exist. | There are unresolved key issues in respect of actual enforcement of contracts, collateral and security. |
| Transaction characteristics | | | | |
| Design and technology risk | The project has fully proven technology and design. | The project has fully proven technology and design. | The project has proven technology and design; start-up issues are mitigated by a strong completion package. | The project has unproven technology and design; technology issues exist and/or complex design. |
| Construction risk | | | | |
| Permitting and siting | All permits have been obtained. | Some permits are still outstanding but their receipt is considered very likely. | Some permits are still outstanding but the permitting process is well defined and they are considered routine. | Key permits still need to be obtained and are not considered routine. Significant conditions may be attached. |
| Type of construction contract | Fixed-price date-certain turnkey construction engineering and procurement contract (EPC). | Fixed-price date-certain turnkey construction EPC. | Fixed-price date-certain turnkey construction contract with one or several contractors. | No or partial fixed-price turnkey contract and/or interfacing issues with multiple contractors. |
| Completion guarantees | The liquidated damages are substantial and are supported by financial substance and/or strong completion guarantee from sponsors with excellent financial standing. | The liquidated damages are significant and are supported by financial substance and/or completion guarantee from sponsors with good financial standing. | The liquidated damages are adequate and are supported by financial substance and/or completion guarantee from sponsors with good financial standing. | The liquidated damages are inadequate or not supported by financial substance or weak completion guarantees. |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Track record and financial strength of contractor in constructing similar projects | Strong. | Good. | Satisfactory. | Weak. |
| Operating risk | | | | |
| Scope and nature of operations and maintenance (O & M) contracts | There is a strong long-term O&M contract, preferably with contractual performance incentives and/or O&M reserve accounts. | There is a long-term O&M contract and/or O&M reserve accounts. | There is a limited O&M contract or O&M reserve account. | There is no O&M contract. There is a risk of high operational cost overruns beyond mitigants. |
| Operator's expertise, track record and financial strength | Very strong or committed technical assistance of the sponsors. | Strong. | Acceptable. | Limited/weak or local operator dependent on local authorities. |
| Off-take risk | | | | |
| (a) If there is a take-or-pay or fixed-price off-take contract | The off-taker has excellent creditworthiness. There are strong termination clauses. The tenor of the contract comfortably exceeds the maturity of the debt. | The off-taker has good creditworthiness. There are strong termination clauses. The tenor of the contract exceeds the maturity of the debt. | The off-taker's financial standing is acceptable. There are normal termination clauses. The tenor of the contract generally matches the maturity of the debt. | The off-taker is considered weak and there are weak termination clauses. The tenor of the contract does not exceed the maturity of the debt. |
| (b) If there is no take-or-pay or fixed-price off-take contract | The project produces essential services or a **commodity** sold widely on a world market. Output can readily be absorbed at projected prices even at lower than historic market growth rates. | The project produces essential services or a **commodity** sold widely on a regional market that will absorb it at projected prices at historical growth rates. | The **commodity** is sold on a limited market that may absorb it only at lower than projected prices. | The project output is demanded by only one or a few buyers or is not generally sold on an organised market. |
| Supply risk | | | | |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Price, volume and transportation risk of feed-stocks; supplier's track record and financial strength | There is a long-term supply contract with a supplier of excellent financial standing. | There is a long-term supply contract with a supplier of good financial standing. | There is a long-term supply contract with a supplier of good financial standing – a degree of price risk may remain. | There is a short-term supply contract or long-term supply contract with a financially weak supplier – a degree of price risk definitely remains. |
| Reserve risks (e.g. natural resource development) | Reserves are independently audited, proven and developed and are well in excess of requirements over lifetime of the project. | Reserves are independently audited, proven and developed and are in excess of requirements over lifetime of the project. | Reserves are proven and can supply the project adequately through the maturity of the debt. | The project relies to some extent on potential and undeveloped reserves. |
| Strength of Sponsor | | | | |
| Sponsor's track record, financial strength and country/sector experience | The sponsor is strong with an excellent track record and high financial standing. | The sponsor is good with a satisfactory track record and good financial standing. | The sponsor is adequate with an adequate track record and good financial standing. | The sponsor is weak with a questionable/no track record and/or financial weaknesses. |
| Sponsor support, as evidenced by equity, ownership clause and incentive to inject additional cash if necessary | Strong. The project is highly strategic for the sponsor (core business – long-term strategy). | Good. The project is strategic for the sponsor (core business – long-term strategy). | Acceptable. The project is considered important for the sponsor (core business). | Limited. The project is not key to the sponsor's long-term strategy or core business. |
| Security package | | | | |
| Assignment of contracts and accounts | Fully comprehensive. | Comprehensive. | Acceptable. | Weak. |
| Pledge of assets, taking into account quality, value and liquidity of assets | First perfected security interest in all project assets, contracts, permits and accounts necessary to run the project. | Perfected security interest in all project assets, contracts, permits and accounts necessary to run the project. | Acceptable security interest in all project assets, contracts, permits and accounts necessary to run the project. | Little security or collateral for lenders; weak negative pledge clause. |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Lender's control over cash flow (e.g. cash sweeps, independent escrow accounts) | Strong. | Satisfactory. | Fair. | Weak. |
| Strength of the covenant package (mandatory prepayments, payment deferrals, payment cascade, dividend restrictions, etc) | The covenant package is strong for this type of project.<br>The project may issue no additional debt. | The covenant package is satisfactory for this type of project.<br>The project may issue extremely limited additional debt. | The covenant package is fair for this type of project.<br>The project may issue limited additional debt. | The covenant package is insufficient for this type of project.<br>The project may issue unlimited additional debt. |
| Reserve funds (debt service, O&M, renewal and replacement, unforeseen events, etc) | There is a longer than average coverage period, all reserve funds are fully funded in cash or letters of credit from highly rated banks. | There is an average coverage period and all reserve funds fully funded. | There is an average coverage period and all reserve funds fully funded. | The coverage period is shorter than average and reserve funds are funded from operating cash flows. |

***Table 2: Supervisory rating grades for income-producing real estate exposures***

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Financial strength | | | | |
| Market conditions | The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is equal or lower than forecasted demand. | The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is roughly equal to forecasted demand. | Market conditions are roughly in equilibrium. Competitive properties are coming on the market and others are in the planning stages. The project's design and capabilities may not be state of the art compared to new projects. | Market conditions are weak. It is uncertain when conditions will improve and return to equilibrium. The project is losing tenants at lease expiration. New lease terms are less favourable compared to those expiring. |
| Financial ratios and advance rate | The property's DSCR is considered strong (DSCR is not relevant for the construction phase) and its loan to valuation ratio (LVR) is considered low given its property type. Where a secondary market exists, the transaction is underwritten to market standards. | The DSCR (not relevant for development real estate) and LVR are satisfactory. Where a secondary market exists, the transaction is underwritten to market standards. | The property's DSCR has deteriorated and its value has fallen, increasing its LVR. | The property's DSCR has deteriorated significantly and its LVR is well above underwriting standards for new loans. |
| Stress analysis | The property's resources, contingencies and liability structure allow it to meet its financial obligations during a period of severe financial stress (e.g. increase in interest rates, downturn in economic growth). | The property can meet its financial obligations under a sustained period of financial stress (e.g. increase in interest rates, downturn in economic growth). The property is likely to default only under severe economic conditions. | During an economic downturn, the property would suffer a decline in revenue that would limit its ability to fund capital expenditures and significantly increase the risk of default. | The property's financial condition is strained and is likely to default unless conditions improve in the near term. |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Cash-flow predictability | | | | |
| (a) For complete and stabilised property | The property's leases are long-term with creditworthy tenants and their maturity dates are scattered. The property has a track record of tenant retention upon lease expiration. Its vacancy rate is low. Expenses (maintenance, insurance, security and property taxes) are predictable. | Most of the property's leases are long-term, with tenants that range in creditworthiness. The property experiences a normal level of tenant turnover upon lease expiration. Its vacancy rate is low. Expenses are predictable. | Most of the property's leases are medium rather than long-term with tenants that range in creditworthiness. The property experiences a moderate level of tenant turnover upon lease expiration. Its vacancy rate is moderate. Expenses are relatively predictable but vary in relation to revenue. | The property's leases are of various terms with tenants that range in creditworthiness. The property experiences a very high level of tenant turnover upon lease expiration. Its vacancy rate is high. Significant expenses are incurred preparing space for new tenants. |
| (b) For complete but not stabilised property | Leasing activity meets or exceeds projections. The project should achieve stabilisation in the near future. | Leasing activity meets or exceeds projections. The project should achieve stabilisation in the near future. | Most leasing activity is within projections: however, stabilisation will not occur for some time. | Market rents do not meet expectations. Despite achieving target occupancy rate, cash flow coverage is tight due to disappointing revenue. |
| (c) For construction phase | The property is entirely pre-leased through the tenor of the loan or pre-sold to an investment grade tenant or buyer or the bank has a binding commitment for take-out financing from an investment grade lender. | The property is entirely pre-leased or pre-sold to a creditworthy tenant or buyer or the bank has a binding commitment for permanent financing from a creditworthy lender. | Leasing activity is within projections but the building may not be pre-leased and take-out financing may not exist. The bank may be the permanent lender. | The property is deteriorating due to cost overruns, market deterioration, tenant cancellations or other factors. There may be a dispute with the party providing the permanent financing. |
| Asset characteristics | | | | |
| Location | The property is located in a highly desirable location that is | The property is located in a desirable location that is | The property location lacks a competitive advantage. | The property's location, configuration, design and |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| | convenient to services that tenants desire. | convenient to services that tenants desire. | | maintenance have contributed to the property's difficulties. |
| Design and condition | The property is favoured due to its design, configuration and maintenance and is highly competitive with new properties. | The property is appropriate in terms of its design, configuration and maintenance. The property's design and capabilities are competitive with new properties. | The property is adequate in terms of its configuration, design and maintenance. | Weaknesses exist in the property's configuration, design or maintenance. |
| Property is under construction | The construction budget is conservative and technical hazards are limited. Contractors are highly qualified. | The construction budget is conservative and technical hazards are limited. Contractors are highly qualified. | The construction budget is adequate and contractors are ordinarily qualified. | The project is over budget or unrealistic given its technical hazards. Contractors may be under qualified. |
| Strength of Sponsor/Developer | | | | |
| Financial capacity and willingness to support the property | The sponsor/developer made a substantial cash contribution to the construction or purchase of the property. The sponsor/developer has substantial resources and limited direct and contingent liabilities. The sponsor/developer's properties are diversified geographically and by property type. | The sponsor/developer made a material cash contribution to the construction or purchase of the property. The sponsor/developer's financial condition allows it to support the property in the event of a cash flow shortfall. The sponsor/developer's properties are located in several geographic regions. | The sponsor/developer's contribution may be immaterial or non-cash. The sponsor/developer is average to below average in financial resources. | The sponsor/developer lacks capacity or willingness to support the property. |
| Reputation and track record with similar properties | Management are experienced and the sponsors' quality is high. Strong reputation, | Appropriate management and sponsors' quality. The sponsor or management has a | Moderate management and sponsor's quality. The management or sponsor track | Ineffective management and sub-standard sponsor's quality. The management and sponsor difficulties have contributed to |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| | lengthy and successful record with similar properties. | successful record with similar properties. | record does not raise serious concerns. | difficulties in managing properties in the past. |
| Relationships with relevant real estate agents | Strong relationships with leading agents such as leasing agents. | Proven relationships with leading agents such as leasing agents. | Adequate relationships with leasing agents and other parties providing important real estate services. | Poor relationships with leasing agents and/or other parties providing important real estate services. |
| Security package | | | | |
| Nature of lien | Perfected first lien. | Perfected first lien. | Perfected first lien. | Ability of lender to foreclose is constrained. |
| Assignment of rents (for projects leased to long-term tenants) | The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to remit rents directly to the lender, such as a current rent roll and copies of the project's leases. | The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as current rent roll and copies of the project's leases. | The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as current rent roll and copies of the project's leases. | The lender has not obtained an assignment of the leases or has not maintained the information necessary to readily provide notice to the building's tenants. |
| Quality of the insurance coverage | Appropriate. | Appropriate. | Appropriate. | Substandard. |

***Table 3: Supervisory rating grades for object finance exposures***

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Financial strength | | | | |
| Market conditions | Demand is strong and growing. There are strong entry barriers and low sensitivity to changes in technology and economic outlook. | Demand is strong and stable. There are some entry barriers and some sensitivity to changes in technology and economic outlook. | Demand is adequate and the entry barriers are limited and stable. There is significant sensitivity to changes in technology and economic outlook. | Demand is weak and declining, vulnerable to changes in technology and economic outlook and a highly uncertain environment. |
| Financial ratios (debt service coverage ratio and loan-to-value ratio) | The financial ratios are strong considering the type of asset. Very robust economic assumptions. | The financial ratios are strong/acceptable considering the type of asset. Robust project economic assumptions. | The financial ratios are standard for the asset type. | The financial ratios are aggressive considering the type of asset. |
| Stress analysis | Long-term revenues are stable and capable of withstanding severely stressed conditions through an economic cycle. | Short-term revenues are satisfactory. The loan can withstand some financial adversity. Default is only likely under severe economic conditions. | Short-term revenues are uncertain. Cash flows are vulnerable to stresses that are not uncommon through an economic cycle. The loan may default in a normal downturn. | Revenues are subject to strong uncertainties. Even in normal economic conditions the asset may default, unless conditions improve. |
| Market liquidity | The market is structured on a worldwide basis. Assets are highly liquid. | The market is worldwide or regional. Assets are relatively liquid. | The market is regional with limited prospects in the short term, implying lower liquidity. | The market is local and/or has poor visibility. There is low or no liquidity, particularly on niche markets. |
| Political and legal environment | | | | |
| Political risk, including transfer risk | Very low. There are strong mitigation instruments, if needed. | Low. There are satisfactory mitigation instruments, if needed. | Moderate. There are fair mitigation instruments. | High. The mitigation instruments, if any, are weak. |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Legal and regulatory risks | The jurisdiction is favourable to repossession and enforcement of contracts. | The jurisdiction is favourable to repossession and enforcement of contracts. | The jurisdiction is generally favourable to repossession and enforcement of contracts, even if repossession might be long and/or difficult. | The legal and regulatory environment is poor and/or unstable. The jurisdiction may make repossession and enforcement of contracts lengthy or impossible. |
| Transaction characteristics | | | | |
| Financing term compared to the economic life of the asset | Full payout profile/minimum balloon. No grace period. | Balloon more significant, but still at satisfactory levels. | Important balloon with potential grace periods. | Repayment in fine or high balloon. |
| Operating risk | | | | |
| Permits/licensing | All permits have been obtained; the asset meets current and foreseeable safety regulations. | All permits have been obtained or are in the process of being obtained; the asset meets current and foreseeable safety regulations. | Most permits have been obtained or are in the process of being obtained, outstanding ones are considered routine, the asset meets current safety regulations. | There are problems in obtaining all required permits, part of the planned configuration and/or planned operations might need to be revised. |
| Scope and nature of O & M contracts | There is a strong long-term O&M contract, preferably with contractual performance incentives and/or O&M reserve accounts (if needed). | There is a long-term O&M contract and/or O&M reserve accounts (if needed). | There is a limited O&M contract or O&M reserve account (if needed). | There is no O&M contract and a risk of high operational cost overruns beyond mitigants. |
| Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease | Excellent track record and strong re-marketing capability. | Satisfactory track record and re-marketing capability. | Weak or short track record and uncertain re-marketing capability. | No or unknown track record and inability to re-market the asset. |
| Asset characteristics | | | | |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Configuration, size, design and maintenance (i.e. age, size for a plane) compared to other assets on the same market | There is a strong advantage in design and maintenance. Configuration is standard such that the object meets a liquid market. | The design and maintenance is above average. Standard configuration, possibly with very limited exceptions, such that the object meets a liquid market. | The design and maintenance is average. Configuration is somewhat specific and thus might cause a narrower market for the object. | The design and maintenance is below average. The asset is near the end of its economic life. Configuration is very specific. The market for the object is very narrow. |
| Resale value | The current resale value is well above debt value. | The resale value is moderately above debt value. | The resale value is slightly above debt value. | The resale value is below debt value. |
| Sensitivity of the asset value and liquidity to economic cycles | The asset value and liquidity are relatively insensitive to economic cycles. | The asset value and liquidity are sensitive to economic cycles. | The asset value and liquidity are quite sensitive to economic cycles. | The asset value and liquidity are highly sensitive to economic cycles. |
| Strength of sponsor | | | | |
| Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease | Excellent track record and strong re-marketing capability. | Satisfactory track record and re-marketing capability. | Weak or short track record and uncertain re-marketing capability. | No or unknown track record and inability to re-market the asset. |
| Sponsors' track record and financial strength | The sponsors have an excellent track record and high financial standing. | The sponsors have a good track record and good financial standing. | The sponsors have an adequate track record and good financial standing. | The sponsors have a questionable/no track record and/or financial weaknesses. |
| Security package | | | | |
| Asset control | Legal documentation provides the lender effective control (e.g. a first perfected security interest or a leasing structure including such security) on the | Legal documentation provides the lender effective control (e.g. a perfected security interest or a leasing structure including such security) on the | Legal documentation provides the lender effective control (e.g. a perfected security interest or a leasing structure including such security) on the asset, or on the company owning it. | The contract provides little security to the lender and leaves room to some risk of losing control on the asset. |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| | asset or on the company owning it. | asset or on the company owning it. | | |
| Rights and means at the lender's disposal to monitor the location and condition of the asset | The lender is able to monitor the location and condition of the asset at any time and place (regular reports, possibility to lead inspections). | The lender is able to monitor the location and condition of the asset almost at any time and place. | The lender is able to monitor the location and condition of the asset almost at any time and place. | The lender has a limited ability to monitor the location and condition of the asset. |
| Insurance against damages | There is strong insurance coverage including collateral damages with top quality insurance companies. | The insurance coverage is satisfactory (not including collateral damages) with good quality insurance companies. | The insurance coverage is fair (not including collateral damages) with acceptable quality insurance companies. | The insurance coverage is weak (not including collateral damages) or with weak quality insurance companies. |

***Table 4: Supervisory rating grades for commodities finance exposures***

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Financial strength | | | | |
| Degree of over-collateralisation of trade | Strong. | Good. | Satisfactory. | Weak. |
| Political and legal environment | | | | |
| Country risk | No country risk. | There is limited exposure to country risk (in particular, offshore location of reserves in an emerging country). | There is some exposure to country risk (in particular, offshore location of reserves in an emerging country). | There is strong exposure to country risk (in particular, inland reserves in an emerging country). |
| Mitigation of country risks | Very strong mitigation. Strong offshore mechanisms. Strategic **commodity**. Excellent buyer. | Strong mitigation. Offshore mechanisms. Strategic **commodity**. Strong buyer. | Acceptable mitigation. Offshore mechanisms. Less strategic **commodity**. Acceptable buyer. | Only partial mitigation. No offshore mechanisms. Non-strategic **commodity**. Weak buyer. |
| Asset characteristics | | | | |
| Liquidity and susceptibility to damage | The **commodity** is quoted and can be hedged through futures or over the counter (OTC) instruments. The **commodity** is not susceptible to damage. | The **commodity** is quoted and can be hedged through OTC instruments. The **commodity** is not susceptible to damage. | The **commodity** is not quoted but is liquid. There is uncertainty about the possibility of hedging. The **commodity** is not susceptible to damage. | The **commodity** is not quoted. Liquidity is limited given the size and depth of the market. There are no appropriate hedging instruments. The **commodity** is susceptible to damage. |
| Strength of sponsor | | | | |
| Financial strength of trader | Very strong, relative to trading philosophy and risks. | Strong relative to trading philosophy and risks. | Adequate relative to trading philosophy and risks. | Weak relative to trading philosophy and risks. |

| | Strong | Good | Satisfactory | Weak |
|---|---|---|---|---|
| Track record, including ability to manage the logistic process | Extensive experience with the type of transaction in question. Strong record of operating success and cost efficiency. | Sufficient experience with the type of transaction in question. Above average record of operating success and cost efficiency. | Limited experience with the type of transaction in question. Average record of operating success and cost efficiency. | Limited or uncertain track record in general. Volatile costs and profits. |
| Trading controls and hedging policies | Strong standards for counterparty selection, hedging and monitoring. | Adequate standards for counterparty selection, hedging and monitoring. | Adequate standards for counterparty selection, hedging and monitoring. Past deals have experienced no or minor problems. | Weak standards for counterparty selection, hedging and monitoring. Trader has experienced significant losses on past deals. |
| Quality of financial disclosure | Excellent. | Good. | Satisfactory. | Financial disclosure contains some uncertainties or is insufficient. |
| Security package | | | | |
| Asset control | First perfected security interest provides the lender legal control of the assets at any time if needed. | First perfected security interest provides the lender legal control of the assets at any time if needed. | At some point in the process, there is a break in the control of the assets by the lender. The break is mitigated by knowledge of the trade process or a third party undertaking as the case may be. | Contract leaves room for some risk of losing control over the assets. Recovery could be jeopardised. |
| Insurance against damages | Insurance coverage is strong, including collateral damages with top quality insurance companies. | Insurance coverage is satisfactory (not including collateral damages) with good quality insurance companies. | Insurance coverage is fair (not including collateral damages) with acceptable quality insurance companies. | Insurance coverage is weak (not including collateral damages) or with weak quality insurance companies. |