

## **The Scottish Government**

Analysis of the IFRS 9 Expected Credit Loss for an  
Issued Financial Guarantee Contract

07 September 2020

# 1. Background

## Issued Financial Guarantee Contract – measurement of Expected Credit Losses

### Overview

- The Scottish Government (the “Entity”, “SG”) has issued a 25-year Financial Guarantee Contract (the “FGC” or “the Guarantee”) to SIMEC Lochaber Hydropower Ltd (“SIMEC”) which guarantees contractual payments due to SIMEC from Liberty Aluminium Lochaber Ltd (“Liberty”) in respect of commodities (energy) used under the terms of a Power Purchase Agreement (“PPA”). The Guarantee can be called by SIMEC on a quarterly basis in respect of any amounts due and unpaid.
- The annual exposure to SG under the Guarantee is estimated to be c£14m-c£32m. The total forecast, undiscounted cash flows for the 25-year tenor of the Guarantee was c£586m as at the origination date of the Guarantee. The net present value (“NPV”) of the remaining cash flows as at 31 Mar 2020, discounted at a rate of [REDACTED] is estimated to be [REDACTED]
- Fees due to SG total [REDACTED] payable over the 25-year tenor of the Guarantee. The fee profile is weighted such that [REDACTED] of the Guarantee.
- Counter-indemnities from parent companies in both the SIMEC and Liberty group of entities, as well as a comprehensive security package (the “Security”) reduce the gross exposure to SG, [REDACTED] [REDACTED] plant (the “Plant”) is maintained throughout.
- Principal Security features include:
  - First lien security over the Plant, smelter and land;
  - Floating charges and share pledges in associated [REDACTED] incorporated to facilitate the financing of the structured transaction to which the Guarantee relates;
  - Counter-indemnities issued by the SIMEC and Liberty group ultimate parent entities.
- In an [REDACTED], the total of the [REDACTED] [REDACTED]
- There was a [REDACTED] [REDACTED] [REDACTED] [REDACTED]

### IFRS 9 Accounting treatment

#### IFRS 9 Financial Instruments (“IFRS 9”) - initial recognition of the FGC

- The FGC is a financial liability and is initially recognised at fair value (“FV”).

#### IFRS 9 - subsequent measurement of the FGC

- Subsequently, the FGC is measured at the higher of:
  - i. the Expected Credit Loss (“ECL”) allowance determined in accordance with IFRS 9; and
  - ii. the amount initially recognised less, when appropriate, the cumulative amount of income recognised in accordance with the principles of IFRS 15 Revenue Recognition.

### Assumptions

You have confirmed that:

- SG has not chosen, as an accounting policy choice, to account for the Guarantee as an insurance contract under IFRS 4 *Insurance Contracts*. Instead, the Guarantee has been classified and measured in accordance with the requirements of IFRS 9.
- SG has determined the FV of the Guarantee at the origination date in accordance with the requirements of IFRS 9.
- The scope of this report is limited to a consideration of potential inputs and modelling assumptions in order to assist you in your assessment of a potential ECL (12-month for Stage 1, or Lifetime for Stages 2 and 3) for the Guarantee as at 31 March 2020.

## 2. Executive Summary

### IFRS 9 ECL methodology – proposed approach and data used

#### Context and limitations of scope

- You have requested that Deloitte (“we”, “us”) provide support with your estimation of potential IFRS 9 ECL to the FGC as at 31 March 2020 (the “Services”). The requirement to measure ECL has arisen following the transition of IFRS reporting from an “incurred loss” model of impairment, applicable under IAS 39 *Financial Instruments: Recognition and Measurement* (“IAS 39”) to an “expected loss” impairment model under IFRS 9.
- The scope of the Services and this Report is limited solely to those procedures set out in our Work Order for additional services dated 04 September 2020. The Services do not constitute a statutory audit engagement and the Report does not provide an accounting opinion on any material subject to the scope of the Services. We did not subject the information contained in our Report or provided to us by you to checking or verification procedures. This is normal practice when carrying out such limited scope procedures, but contrasts significantly with, for example, an audit. The procedures we performed were not designed to and are not likely to reveal fraud.
- You have acknowledged that you are responsible for establishing and maintaining an effective internal control system that reduces the likelihood that errors or irregularities will occur and remain undetected; however, it does not eliminate that possibility. Nothing in our work guarantees that errors or irregularities will not occur, nor is it designed to detect any such errors or irregularities should they occur. We have not carried out a specific review of your systems and internal controls and accordingly it is not part of our responsibilities to provide comments on their effectiveness or the ability of the systems and internal controls to support the business and its expected growth in the future.
- The scope of our Services and our responsibilities does not involve us performing the work necessary for the purpose of providing, neither shall we provide, any assurance on the reliability, proper compilation or clerical accuracy of any plan, budget, projection or forecast (“prospective financial information”) nor the reasonableness of the underlying assumptions. Since any prospective financial information relates to the future, it may be affected by unforeseen events. Actual results are likely to be different from those projected because events and circumstances frequently do not occur as expected, and those differences may be material.
- The scope of our work in preparing the Report was limited solely to those procedures set out above. Accordingly we do not express any opinion on the procedures we have performed. You are responsible for determining whether the scope of our work specified is sufficient for your purposes and we make no representation regarding the sufficiency of these procedures for your purposes. If we were to perform additional procedures, other matters might come to our attention that would be reported to you.
- The Report has been prepared on the basis of the information provided to us and the circumstances existing at the time of preparation of the Report. Deloitte has no responsibility either (i) to update the Report for events or changes occurring after delivery of the Report, or (ii) to monitor the continuing relevance or suitability of the Report for the purposes for which it was supplied.
- The principal challenge in estimating expected, future credit losses is that the drivers of the calculation must be described by a series of risk drivers whose interactions (and input sensitivities) across the operating cycle of the Liberty’s business are [REDACTED] under the IAS 39 incurred loss approach.

## 2. Executive Summary

### IFRS 9 ECL calculation – limitations and uncertainties

#### **Context and limitations of scope continued (cont.)**

- The scope of this report has been limited to an independent assessment of ECL to the FGC under a reasonable, yet plausible, range of input values inferred, insofar as is feasible, from Liberty's internal financial data and forecasts, augmented and overlaid with appropriate external market benchmarks selected by us.
- We note that you confirmed to us that you will ultimately decide the appropriate IFRS 9 Staging allocation (Stage 1, 2 or 3) for the FGC, and ECL value from the range of options. You have acknowledged that the Staging allocation drives the indicative ECL values detailed throughout this report. You have confirmed that this decision will be informed by, and arise as a result of, the rational judgement of experienced finance professionals according to their assessment and knowledge of the facts and circumstances described herein.

#### **ECL calculation and limitations**

- The range of ECL presented in this report have been provided in consideration of the key principles of IFRS 9 and taking into account the data available to us. We have selected input calibrations based on a combination of data generated by Liberty's internal processes; exogenous macro data; and known market benchmarks. We have also considered representations made by you.
- We recognise that genuine uncertainty exists in many of the input calibrations and have therefore sensitised key inputs. Furthermore, we recognise that it is impossible to eliminate subjectivity in our own input calibrations.
- The purpose of the workings throughout this report is to provide a high-level assessment of potential IFRS 9 ECL outcomes of the FGC for the Obligor as at 31 March 2020. This analysis does not extend to an assessment of the origination date value of the FGC recorded by SG. Note that we do not assess border risks that might otherwise be included in a market-based FV approach for the FGC.
- Due to [REDACTED] of data, we have provided sensitivities and details of all underlying assumptions in order to support you in making your assessment of the appropriate ECL to the FGC as guided by the range of outcomes detailed in this Report.
- We have assumed that the information presented in the documentation provided to us, in addition to the assertions and representations made by you, are an accurate representation of the facts and circumstances relevant to the FGC and its associated credit risks. You have acknowledged that the accuracy of our work is conditional upon the accuracy of the data made available to us and that the responsibility for the production and accuracy of that data is your responsibility.
- Where the approach is not explicitly supported by industry benchmarks, we have used our best professional judgement and scrutiny to present a description of market practice that is consistent with that which a suitably skilled and experienced independent third party is also likely to have observed in reality.

## 2. Executive Summary

### IFRS 9 ECL calculation – limitations and uncertainties (cont.)

#### ECL calculation and limitations (cont.)

- Throughout this document, we refer to Expected Loss (“EL”) models as IFRS 9 impairment models. We note that an alternative definition of EL exists under the Basel Internal Ratings Based (“IRB”) minimum regulatory capital estimation, representing expected future credit losses under regulatory Probability of Default (“PD”), Exposure At Default (“EAD”) and Loss Given Default (“LGD”) calibrations, typically with additional conservatism applied. In this document, we refer to EL models whose calibration is Point-In-Time (“PiT”) and hence whose output is appropriate for use within the IFRS 9 credit loss framework.
- Note that the management of the Entity will select the IFRS 9 stage allocation and ECL impairment value from the range of options having exercised experienced credit judgments during their assessment to establish own opinion.
- Please note that the [REDACTED], as outlined in Section 8.3, has been assumed to be [REDACTED] with the [REDACTED]. We have stated in this Report a number of assumptions made by us in determining potential [REDACTED] that are highly sensitive to judgements and that should be made by SG with regards to the [REDACTED], which may otherwise be required. In summary:
  - We have assumed a [REDACTED] as proposed by a [REDACTED]
  - We have based our [REDACTED] stated in the [REDACTED] for the purpose of IFRS9 expected loss considerations described herein.
- Please note that we have [REDACTED] and we have used only information from the [REDACTED] and assumptions as outlined in Section 8.3 of our report.

#### Consideration of macro economic scenarios – COVID-19

- We have analysed the impact of COVID-19 on the energy and resources industry. We have assumed, for the purpose of our analyses that the [REDACTED]
  - [REDACTED] which will be reflected in the [REDACTED]; and
  - The [REDACTED] and, consequently, the [REDACTED]. This is reflected in [REDACTED]
- We have also [REDACTED], provided to us by you, [REDACTED] which suggest that there has been [REDACTED] in the [REDACTED] which may otherwise indicate that the [REDACTED] as presented in this Report are [REDACTED]

## 2. Executive Summary

### IFRS 9 ECL values – sensitivity to Stage allocations

#### Sensitivities and Range Estimates

- In consideration of assumptions and sensitivities applied by us due to the [REDACTED] we have presented a range of potential [REDACTED] based on an [REDACTED] as at 31 March 2020.
- Since consolidated audited financial statements of [REDACTED]
- The difference between Stage 1, 12m-ECL, and Stage 2, LECL, is primarily driven by high Lifetime PD values for instruments with residual maturities over 20 years from the reporting period-end.
- In order to estimate ECL it is normal to consider a range of scenarios including at least one central case, an upside and a downside case. IFRS 9 requires that ECL should represent a probability weighted expectation, weighted according to the probability of the loss associated with each scenario.
- The value differences between scenarios 1-3 represent the range in the [REDACTED], and sensitivity applied to the change in assumptions with regards to [REDACTED]. These [REDACTED] have been considered in Sections 8.2 - 8.3 of this report.
- Scenarios 4-5 reflects the [REDACTED]. Although [REDACTED], taking into account [REDACTED] it is fair to assume [REDACTED] to be the prudent approach.
- The total estimated ECL for Stage 2 ranges from [REDACTED]. We consider, using the assumptions stated below, that a reasonable ECL for Stage 2 is likely to be in the region of [REDACTED], being a weighted average across all five scenarios presented below.
- Note that probabilities of the respective scenarios presented are illustrative and should be updated by management, see Section 11 for formula to calculate final ECL.

Scenario	Comments	Exposure (£m)	TTC PD	12m PIT PD	LGD	Stage 1 12 month ECL (£m)	Stage 2 Lifetime ECL (£m)	Stage 3 Lifetime ECL (£m)	Probability of scenarios ECL*
1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

\*Probability of scenarios presented are illustrative and should be determined with management according to a thorough understanding of both internal and external factors

### 3. Approach

The proposed approach for calculating ECL is based on a practical solution for the individual assessment of cash flows using available data

#### Data limitations

- It was agreed with you that an independent expectation of the ECL should be calculated using market-based benchmark methodologies.
- SG does not [REDACTED] of the future cash flow expectations.
- Where robust [REDACTED] we have relied on industry benchmarks and applied assumptions, drawing specific attention to these where used.

#### Our approach

- We have developed an approach which is applicable to any entity which chooses to use the PD/EAD/LGD discounted marginal losses to quantifying IFRS 9 Expected credit loss.
- We have:
  - Estimated PD values and made assumptions on the 12-month PD and Lifetime PD, based on the rating agency reports on historical observed default rates;
  - Used SG's balance profile to inform EAD in each year remaining to maturity of the FGC;
  - Used a discount rate of [REDACTED] as applied by SG in initial calculations of the discounted cash flow data;
  - Considered a series of options to produce LGD estimates: 1) Analysed external data on LGD; 2) Going Concern considerations, whereby the FGC will be [REDACTED]; and 3) Gone Concern approach, whereby the [REDACTED] would be the [REDACTED];
  - Considered the factors which may drive Stage allocation, noted them for your attention and further consideration, and provided a range of ECL outcomes for each Stage allocation.
- We performed our analysis using information:
  - Received from SG (e.g. valuation of the Security; estimated cash flows expected to be paid as fees to SG; estimated cash flows of the guarantee volumes to be provided each year from years 1 to 25; discount rate; and management accounts of the Liberty and SIMEC groups of entities);
  - Contained within the contractual terms of the FGC;
  - Detailed in [REDACTED]; and
  - Available from [REDACTED]

## 4. Data Sources

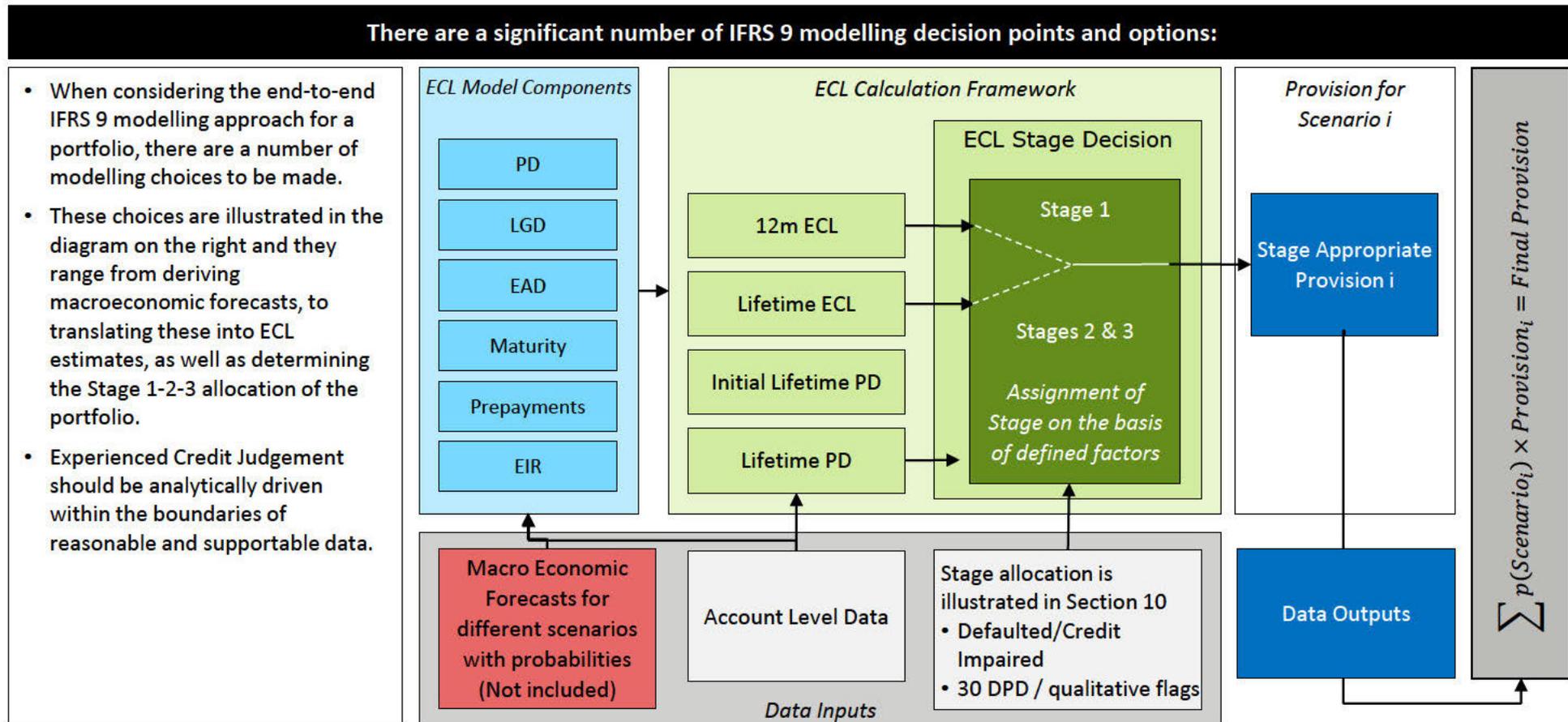
We have used ratings-driven PD data calculated from historical corporate defaults and a combination of data sources for our estimation of LGD

- The tables below outline potential data sources for the development of the PD and LGD calculations
- Due to the [REDACTED], the [REDACTED].
- In each case, the preferred source for model development has been highlighted.

Source	Details
<b>PD</b>	
<b>Internal TTC Rating PD</b>	<ul style="list-style-type: none"> <li>• Not available</li> </ul>
<b>S&amp;P Corporate Default History</b>	<ul style="list-style-type: none"> <li>• Contains long-run history of observed global default rates in each rating band from 1981-2019.</li> <li>• Widely used across the industry for calibrating TTC ratings to PiT PDs. We have used it as an indicator of the PD development across the long-term period for the given rating.</li> </ul>
<b>CARE's Corporate Default History</b>	<ul style="list-style-type: none"> <li>• India rating agency CARE's 1-year, 2-year, and 3-year cumulative issuer weighted average default rates for the period from 2015 to 2019.</li> <li>• Parent of the Liberty group of entities rating of CARE agency from 2019 served as indicative rating</li> </ul>
<b>LGD</b>	
<b>Internal LGD</b>	<ul style="list-style-type: none"> <li>• Not available</li> </ul>
<b>Post-Default Bond Trading Prices</b>	<ul style="list-style-type: none"> <li>• Moody's Recovery Rate reports provide a long-run history of post-default bond trading prices of corporate bonds from 1990.</li> <li>• Widely used across the industry to benchmark long-run average view of loss.</li> </ul>
<b>Expected discounted recovery approach (similar to that employed by the ECB Asset Quality Review process)</b>	<ul style="list-style-type: none"> <li>• ECB Asset Quality Review manual provide methodology on the assessment of the recoveries from the defaulted financial assets.</li> <li>• Methodology includes several outcomes options:               <ul style="list-style-type: none"> <li>○ [REDACTED]; and</li> <li>○ [REDACTED]</li> </ul> </li> <li>• Requires assumptions/estimations of the cash flows from the business and collateral.</li> </ul>

## 5. IFRS 9 ECL

We have calculated ECL under different scenarios and incorporated a number of decision points in accordance with the requirements of IFRS 9



Expected credit loss

Expected credit loss is calculated as 
$$\sum_{t=1}^n iPD_t EAD_t LGD_t (1 + EIR)^{-\frac{t}{12}}$$

where

- t is year since reporting date
- n is the remaining lifetime in years
- iPD<sub>t</sub> is the incremental (or marginal) Probability of Default at time t since reporting date
- EAD<sub>t</sub> is the Exposure at Default at time t since reporting date
- LGD<sub>t</sub> is the Loss Given Default at time t since reporting date
- EIR is the IFRS9 Effective Interest Rate (Discount rate)

## 6. EAD and Other inputs

We have used FGC contractual exposures for calculating EAD

### Exposure At Default Definitions

- EAD describes an expectation of a financial transaction's drawn balance were the obligor to default in future periods, conditional on the account being open and performing at the period start date.
- Based on the terms of the FGC, [REDACTED] and, therefore, [REDACTED] as at the reporting date.
- EAD assumptions:
  - [REDACTED]
  - [REDACTED]
  - [REDACTED]

	2017	2018	2019	2020	2021	...	2041
Guarantee maximum amount per year	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	...	[REDACTED]
Guarantee amount, remaining at each reporting date	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	...	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

### Discount rates used to discount ECL (or expected cash recoveries)

- The discount rate should represent the original effective interest rate ("EIR") calculated at the initial recognition of the FGC.
- We assume that the discount rate used to discount the future cash flows, or ECL, is [REDACTED] as provided by SG.

## 7.1 PD: Annual Default Rates

We have used industry data from Standard & Poor's ("S&P") to [REDACTED]

[REDACTED]

The table below presents the historical, long-run average of observed corporate annual default rates, per S&P rating grade\*, covering:

- the period 1981-2019\*
- the last economic crisis (2007-2011); and
- the most recent economic period (2014-2019).

Note: the S&P default rates are widely used across the industry, in the [REDACTED], for benchmarking and calibration purposes. By studying the relationship between recent default activity and the long run average default rate, one can derive a corresponding 'credit cycle adjustment'.

S&P Rating	Long-Run Average PD (1981-2019)	2007-2011 Avg	2014-2019 Avg
AAA	0.00%	0.00%	0.00%
AA+	0.00%	0.00%	0.00%
AA	0.01%	0.09%	0.00%
AA-	0.02%	0.08%	0.00%
A+	0.04%	0.12%	0.00%
A	0.05%	0.12%	0.00%
A-	0.07%	0.12%	0.00%
BBB+	0.12%	0.12%	0.00%
BBB	0.21%	0.16%	0.03%
BBB-	0.25%	0.41%	0.06%
BB+	0.49%	0.42%	0.04%
BB	0.70%	0.48%	0.08%
BB-	1.19%	0.49%	0.22%
B+	2.08%	1.96%	0.75%
B	5.85%	3.28%	1.13%
B-	8.77%	6.67%	4.36%
CCC/C	24.34%	26.22%	26.87%

Observations
<ul style="list-style-type: none"> <li>• There have been no observed defaults in rating grades AAA and AA+.</li> <li>• There is a high incidence of years with no defaults occurring in ratings grades AA to BBB+.</li> <li>• This indicates an exponential probability distribution, where the median default rate is 0% and the mean default rate is as presented on the left.</li> <li>• These rating grades have also not experienced any defaults since 2012.</li> <li>• In general, with the exception of CCC/C ratings, the recent Observed Default Rates ("ODR") are well below the historical average.</li> <li>• For some of sub-investment grades, the average default rate during the last economic crisis remains below the historical average.</li> <li>• Liberty has not been [REDACTED] [REDACTED] [REDACTED] [REDACTED]</li> <li>• On March 2020 it was reported that [REDACTED] [REDACTED] [REDACTED] [REDACTED]</li> </ul>

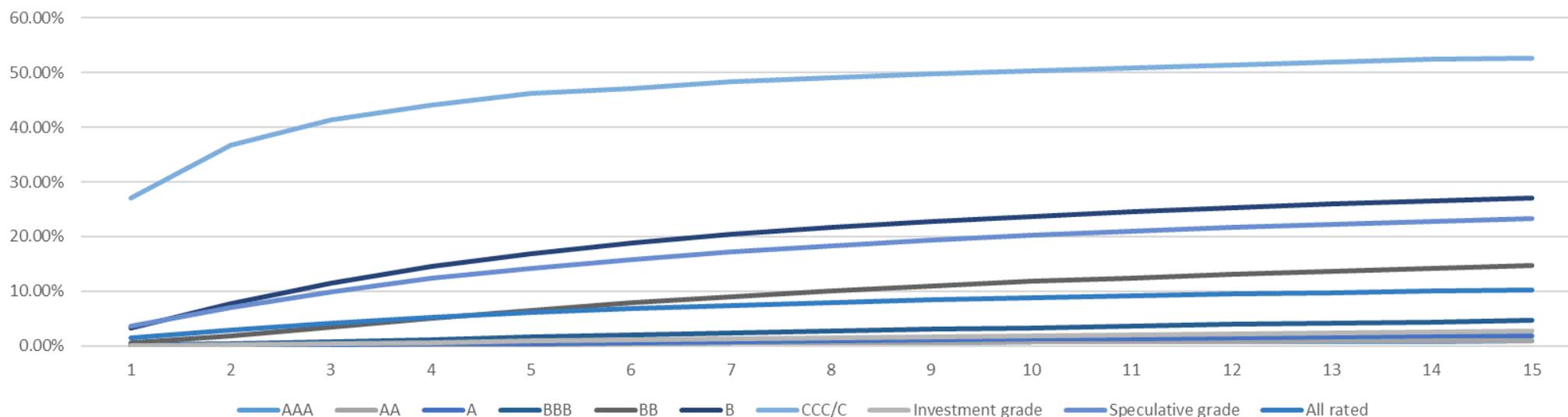
\* Source: 2019 Annual Global Corporate Default And Rating Transition Study

## 7.2 PD: Annual Default Rates

We have used industry data from S&P to [REDACTED]

- The table below illustrates the S&P Global Corporate Average Cumulative Default Rates (1981-2018)\*.
- The Liberty Group Holdings Ltd received a A1 rating from CARE Ratings in March 2019, which implies an [REDACTED]\*\*
- This is [REDACTED] as per the table below, which is used as the basis for the PD calculation, an [REDACTED] is also included.
- Note that the implied PDs from rating agencies are closer to TTC and therefore a PiT adjustment is required for IFRS 9.

Rating/Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AAA	0.00%	0.03%	0.13%	0.24%	0.35%	0.45%	0.51%	0.59%	0.65%	0.70%	0.73%	0.76%	0.79%	0.85%	0.92%
AA	0.02%	0.06%	0.12%	0.22%	0.32%	0.42%	0.51%	0.59%	0.66%	0.73%	0.80%	0.86%	0.92%	0.98%	1.04%
A	0.06%	0.14%	0.23%	0.35%	0.49%	0.63%	0.81%	0.96%	1.12%	1.28%	1.43%	1.57%	1.71%	1.83%	1.98%
BBB	0.17%	0.46%	0.80%	1.22%	1.64%	2.05%	2.41%	2.76%	3.11%	3.44%	3.79%	4.06%	4.32%	4.59%	4.87%
BB	0.65%	2.01%	3.63%	5.25%	6.78%	8.17%	9.36%	10.43%	11.38%	12.22%	12.92%	13.56%	14.13%	14.63%	15.17%
B	3.44%	8.18%	13.02%	17.38%	21.40%	25.04%	28.31%	31.06%	33.49%	35.50%	37.15%	38.61%	39.99%	41.50%	42.87%
CCC/C	26.89%	36.27%	41.13%	43.94%	46.06%	46.99%	48.20%	49.04%	49.80%	50.44%	50.96%	51.51%	52.16%	52.72%	52.80%
Investment grade	0.09%	0.25%	0.43%	0.66%	0.90%	1.14%	1.36%	1.56%	1.77%	1.96%	2.16%	2.32%	2.48%	2.63%	2.80%
Speculative grade	3.66%	7.13%	10.12%	12.56%	14.55%	16.18%	17.55%	18.69%	19.70%	20.62%	21.39%	22.02%	22.60%	23.13%	23.65%
All rated	1.48%	2.91%	4.16%	5.21%	6.08%	6.82%	7.44%	7.97%	8.44%	8.88%	9.26%	9.58%	9.87%	10.13%	10.41%



\* Source: 2019 Annual Global Corporate Default And Rating Transition Study Table 24

\*\* Source: Reuters Press Release, 12 March 2019 & CARE Ratings Average default rates

## 7.3 PD: Distance to Default

In order to account for the risk of the industry in question, we implemented a credit cycle adjustment to the S&P default risk

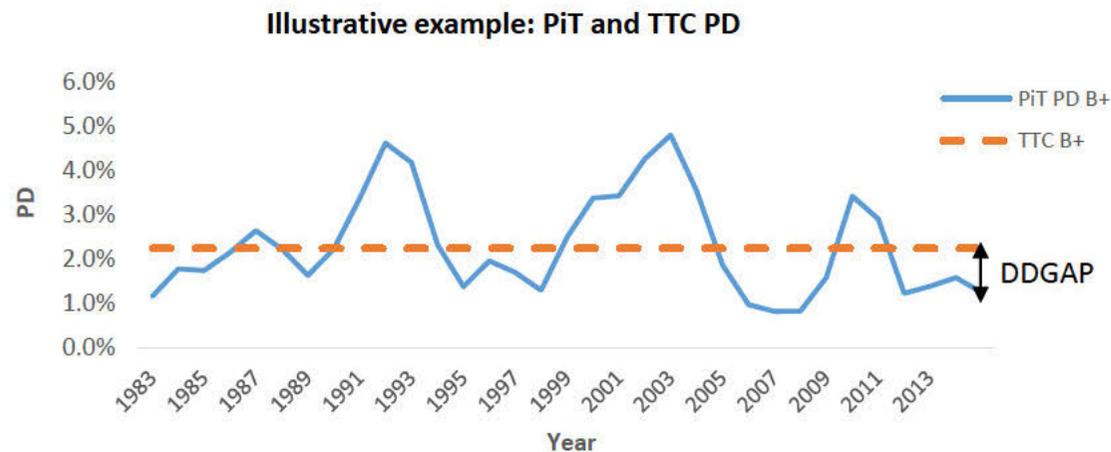
- The Distance to Default (“DD”) GAP captures the systemic risk that influences all companies within a certain segment (industry, country). Based on the Merton framework, credit cycle describes the difference between the PiT PD and TTC PD which is typically modelled in DD space\*.

$$DDGAP_t = DD_t^{PiT} - DD_t^{TTC}, \text{ where}$$

$$DD_t^{PiT} = -\Phi^{-1}(DR_t^{PiT}) \text{ and } DD_t^{TTC} = -\Phi^{-1}(DR_t^{TTC})$$

- The DD GAP credit cycle adjustment is then used to derive the cycle-dependent (PiT) default risk from the cycle-neutral (TTC) default risk.

$$\Phi(DD_{i,t}^{PiT}) = \Phi(DD_{i,t}^{TTC} + DDGAP_t)$$



- As discussed on the next slide, we have estimated the DDGAP at an industry level and applied at an individual asset level based on the rating TTC PD.

\*Note: DDGAP is estimated at an overall level as it represents a systematic factor common to all risk grades

## 7.4 PD: Industry Specific Adjustment

In order to account for the risk of the industry in question, we implemented a credit cycle adjustment to the S&P default risk

- DDGAP can be estimated from published S&P industry-specific default rates, comparing the long-run average default rate to more recent default activity.
- We consider here two potential options for calculating the PiT PD:
  1. Average of industry Default Risk ("DR") in the two most recent years
  2. Weighted average of industry DR in two most recent years ( $75\% * (DR)_{2019} + 25\% * (DR)_{2018}$ )
- A 75% weight is assigned to 2019 to give the most weight to the most recent year, whilst still recognising some default risk in 2018 remains relevant to the current PiT estimate.

Industry	2019	2018	Long Run Average	PiT PD	TTC DD	PiT DD	DD GAP
Energy & natural resources	3.84%	3.94%	3.11%	3.865%	1.86486735	1.766571604	-0.098295746

- Once the DDGAP is calculated at an industry level, it is then applied to the rating specific TTC PD to derive a PiT PD for that rating and industry, see below for an example of the 1-year calculation.

### One-Year PD using S&P BB:

Marginal TTC PD = 0.61%

TTC DD = 2.506

PiT DD = 2.408

Marginal PiT PD = 0.80%

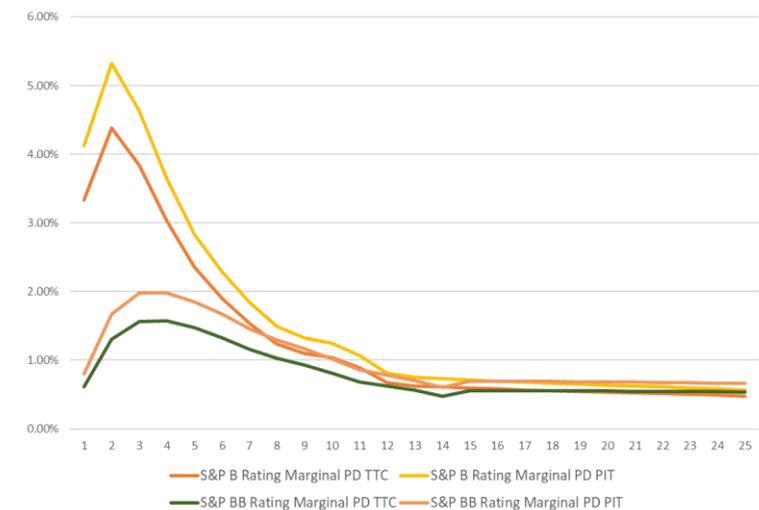
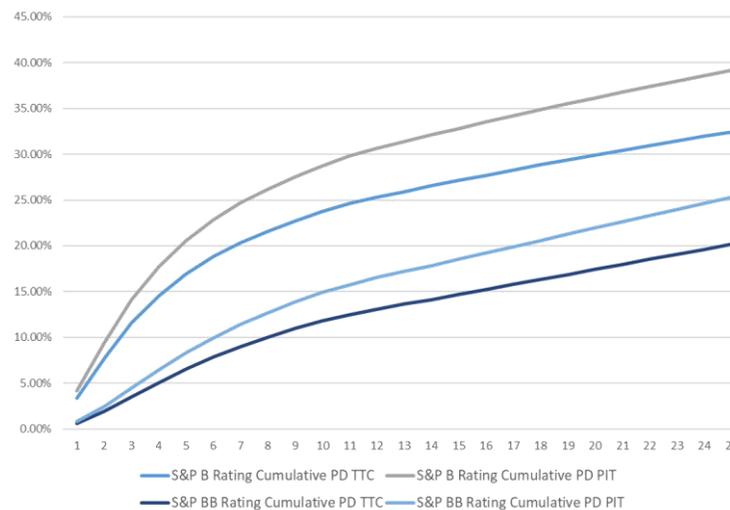
### One-Year PD using S&P B:

Marginal TTC PD = 3.33%

TTC DD = 1.834

PiT DD = 1.736

Marginal PiT PD = 4.13%



- Note that the PiT Adjusted PD for years 1 and 3 aligns to the CARE ODR for the first three years.
- The marginal PD curve is used in the ECL calculation, based on the S&P TTC PD for Rating BB.

## 8.1 LGD Benchmarks

We have used Moody's corporate default and recovery data to benchmark the LGD calculation

- Moody's observed recovery rates are available for 1983 onwards and can be used to estimate LGD on the basis of benchmarks (for externally rated bonds). The table below presents issuer- and volume-weighted recovery rates.
- Since LGD is an obligor-level quantity, the appropriate benchmark is the issuer-weighted recovery rate for First Lien Bank Loans\*.

	Lien Position	Issuer-weighted recoveries			Volume-weighted recoveries			Issuer-weighted LGD
		2018	2017	1983-2018	2017	2017	1983-2018	
Loans	1st Lien Bank Loan							
	2nd Lien Bank Loan							
	Sr. Unsecured Bank Loan							
Bonds	1st Lien Bond							
	2nd Lien Bond							
	Sr. Unsecured Bond							
	Sr. Subordinated Bond							
	Subordinated Bond							
Jr. Subordinated Bond								

- The mid value of LGD of 33% (see ECL inputs in Section 11, Scenario 3, 4) is in line with the Issuer Weighted average LGD of 33% for First Lien Bank Loans.

## 8.2 LGD: Cash Flows from the Liberty Business

In the event of [REDACTED]

### I - Recovery from the operating cash flows

- If the Liberty and/or Liberty group [REDACTED]
- For example, the ECB AQR methodology provides options to derive present values of operating cash flows. For corporate loans, the “steady state cash flows” option is used. This approach uses a multiple applied to periodic estimations of cash flows to determine the present value of those cash flows (Multiple of 6x is applied to derive sustainable cash flows for other industries – no specific multiple exists for the energy sector).
- After assessment of the cash flows that will be allocated to SG’s exposure (taking into account any other senior or pari passu debts), impairment is calculated as: difference between EAD and recoverable amount available to SG.
- The total operating cash flows calculated were as follows:
  - Based on 2017: cash flows were [REDACTED] for the year;
  - Based on 2018: Net cash flows [REDACTED]
  - Based on 2019: cash flows were [REDACTED] for the year;
- We assumed that the [REDACTED]

### Conclusion

- [REDACTED]
- [REDACTED]. This has been explored further in Section 8.3.

## 8.3 LGD: Cash Flows from Recovery of the Security

Recovery in the event of [REDACTED]

### II - Recovery from [REDACTED]

- This scenario assumes that [REDACTED]  
[REDACTED]
- [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED].
- When [REDACTED] used to determine [REDACTED] are as follows:
  - Market value expectations as at the time of sale;
  - Discount to carrying value (in case of a forced sale);
  - [REDACTED];
  - [REDACTED] costs; and
  - SG's share of the collateral.

### Calculations and assumptions

- You have provided us with the [REDACTED]  
[REDACTED]. The [REDACTED] was estimated to be in a range of [REDACTED]  
[REDACTED] based on considerations of a number of scenarios.
- We have based our LGD calculations on the range [REDACTED] stated in the [REDACTED], to reflect sensitivity on the ECL.
- We applied the following assumptions in scenarios 1-5:
  - [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED].
  - [REDACTED];
  - [REDACTED]
  - [REDACTED]
- The discount factor used to discount future cash flows was assumed to be [REDACTED]
- Please note that we have [REDACTED]  
[REDACTED]  
and assumptions as stated above. Also we have not factored any possible [REDACTED]  
[REDACTED] into the assessment described in this Report.

## 9 Macroeconomic considerations

Forward-looking, macroeconomic indicators inform the use of multiple scenario analysis used to capture non-linearity in credit losses. This is a complex area requiring significant judgement

### **IFRS 9 requires entities to assess the potential impact of forward-looking factors in calculating ECL**

- We note that [REDACTED]
- In the [REDACTED]  
[REDACTED]
- External data and macroeconomic factors were considered by us at a high-level through:
  - The use of S&P ratings; and
  - Long-run PD averages.
- Consideration of outcomes and forecasts requires expert credit judgement and is not free from uncertainty.

### **IFRS 9 requires that probability weighted ECL is calculated**

- A number of scenarios should be considered based on anticipated changes in the macro-economy and their impact upon:
  - The ability of [REDACTED]
  - An assessment of [REDACTED], and
  - Change in [REDACTED] (and, respectively, PD) [REDACTED]
- Several scenarios were considered in order to estimate the impact of macroeconomic factors on the PD [REDACTED]  
[REDACTED] and LGD [REDACTED]
- We assumed that [REDACTED]
  - i) [REDACTED]  
[REDACTED] and
  - ii) The [REDACTED] and, consequently, the [REDACTED]. This is reflected in [REDACTED].
- ECL should represent probability-weighted ECL based on various scenarios, based on your consideration.

### **IFRS 9 requires that time value of money is incorporated into the calculations**

- ECL is calculated in [REDACTED] increments from the reporting period-end until the contractual maturity of the Guarantee and discounted to present value using the assumed discount rate of [REDACTED]

# 10.1 IFRS 9 Stage allocation requirements

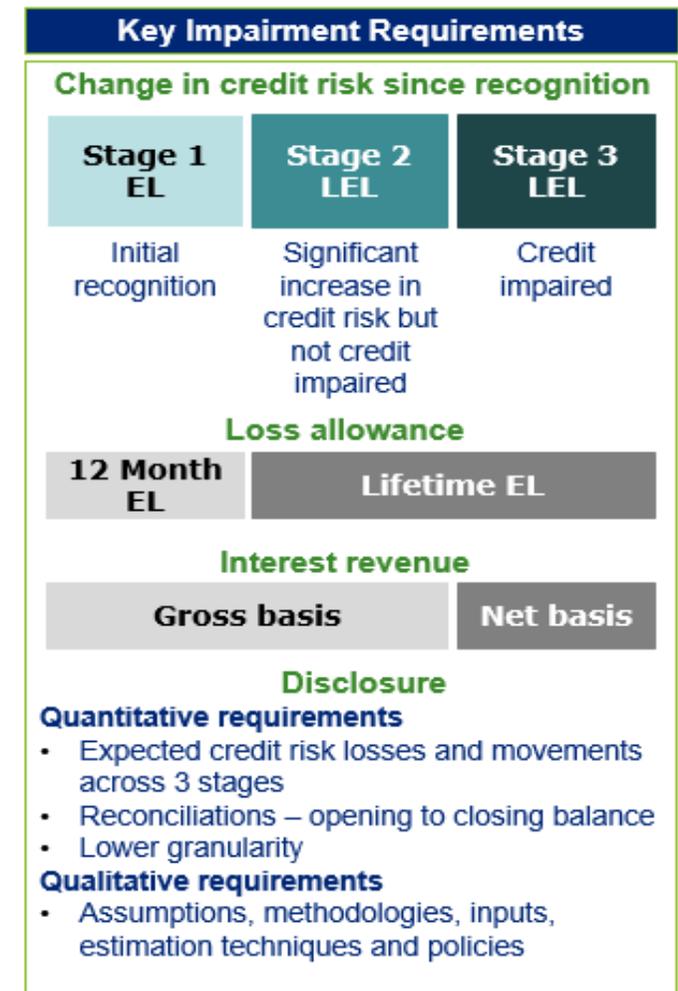
## Guidance on risk classification and minimum triggers

IFRS 9 requires entities to allocate each contract to one of three stages, depending on assumed changes in credit risk since contract origination, and to assess the change in classification at each reporting date:

- **Stage 1** – Initially recognised (not originated credit-impaired)
- **Stage 2** – Significant increase in credit risk
- **Stage 3** – Credit-impaired (defaulted)

Triggers for stage transition are presented in Sections 10.2 – 10.4

Key Stage allocation principles	Considerations for SG
<ul style="list-style-type: none"> <li>• IFRS 9 requires expected loss recognition from day 1 in the amount of 12 months expected loss</li> </ul>	<ul style="list-style-type: none"> <li>• Financial guarantees and loan commitments not measured at FVTPL are included in the scope of IFRS 9 impairment requirements.</li> </ul>
<ul style="list-style-type: none"> <li>• Measurement of credit risk is defined principally by a rating system and changes in PD, not (changes in) the value of any underlying collateral.</li> <li>• Existence of collateral securing the contract does not influence any actual deterioration in credit risk (and therefore transition between different Stage allocations).</li> </ul>	<ul style="list-style-type: none"> <li>• Rating and probability of default was not assessed as at the transition date to IFRS 9, but only on reporting date.</li> <li>• Stage allocation should be only driven by the performance of the company.</li> <li>• Security/parent guarantees should be taken into account only if there is clear evidence that the [REDACTED]</li> </ul>
<ul style="list-style-type: none"> <li>• IFRS 9 requires entities to assess the potential impact of forward-looking factors in measuring credit risk and defining Stage allocation.</li> <li>• IFRS 9 requires that each individual contract is assessed by comparing the credit risk at reporting date with the credit risk at contract origination.</li> </ul>	<ul style="list-style-type: none"> <li>• Where limited information exists [REDACTED] Stage allocation should be based on analysis of management accounts and comparison of performance planned and to date, together with an understanding of the industry perspectives and any impact on the ability of Liberty to satisfy [REDACTED]</li> </ul>
<ul style="list-style-type: none"> <li>• IFRS 9 provide examples of the factors which evidence a significant increase in credit risk and credit-impairment.</li> </ul>	<ul style="list-style-type: none"> <li>• [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] We recommend that Stage triggers are thoroughly assessed by SG and subsequently at each reporting date.</li> </ul>



## 10.2 IFRS 9 Stage allocation – Stage 2 triggers

### Minimum triggers of IFRS 9 Stage 2 (SICR) classification

- If any of the following factors are observed, the FGC should be classified as Stage 2.
- The existence of the Security should not determine Stage allocation, however, the existence of [REDACTED] may impact the PD and mitigate any SICR observed otherwise.
- The absolute value of the ECL, or indeed the change in the absolute value of the ECL, should not determine Stage allocation – this is determined purely from relative changes in credit risk since contract origination.

Events indicative of Significant Increase in Credit Risk	SICR Minimum Triggers (Stage 2), Backstops	Assessment for Liberty
Change in PD	<ul style="list-style-type: none"> <li>• Lifetime PD of the exposure on the reporting date exceeds its lifetime PD at initial recognition by more than [REDACTED]</li> </ul> <p>(Note: Lifetime, rather than 12-month PD should be used. 12-month PD can be used in limited circumstances, only if there is evidence that 12m PD is a reasonable approximation of Lifetime PD)</p>	
Absolute PD level	<ul style="list-style-type: none"> <li>• 12-month PD of the exposure on the reporting date exceeds 20%</li> </ul>	
Watch list, forbearance or restructuring status	<ul style="list-style-type: none"> <li>• Exposure is included on the observation/watch list, is flagged as forborne (as per European Banking Authority (“EBA”) definition) or has been subject to restructuring due to financial difficulty</li> </ul>	
Qualitative factors	<p>In addition to the triggers mentioned above, the Entity should consider additional qualitative triggers listed in Commission Regulation (EU) 2016/2067 IFRS 9 B5.5.17 a)-p)</p> <p>These are listed in Section 10.3.</p>	

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## 10.3 IFRS 9 Stage allocation – Stage 2 triggers

### Qualitative factors for Stage 2 (SICR) classification – IFRS 9 B5.5.17 a-p

Non-exhaustive list of qualitative factors to consider when assessing SICR	Assessment for Liberty
a) significant changes in internal price indicators of credit (the credit spread of similar financial instruments, terms and counterparty)	
b) changes in the rates or terms of an existing instrument (more stringent covenants, increased amounts of collateral or guarantees, or higher income coverage)	
c) significant changes in external market indicators of credit risk for a financial instrument (e.g. credit spread, credit default swap prices, debt or equity prices)	
d) an actual or expected significant change in the financial instrument's external credit rating	
e) an actual or expected internal credit rating downgrade for the borrower	
f) existing or forecast adverse changes in business, financial or economic conditions (interest rates, unemployment)	
g) an actual or expected significant change in the operating results of the borrower (declining revenues or margins, increasing operating risks, working capital deficiencies, decreasing asset quality, increased balance sheet leverage, liquidity, management problems or changes in the scope of business or organisational structure (such as the discontinuance of a segment of the business) that results in a significant change in the borrower's ability to meet its debt obligations	
h) significant increases in credit risk on other financial instruments of the same borrower.	
i) an actual or expected significant adverse change in the regulatory, economic, or technological environment of the borrower	
j) significant changes in the value of the collateral supporting the obligation or quality of guarantees, which are expected to reduce the borrower's economic incentive to make scheduled contractual payments	
k) a significant change in the quality of the guarantee provided by a shareholder	
l) significant changes, such as reductions in financial support from a parent, or change in the quality of credit enhancement	
m) expected changes in the loan documentation and terms, including an expected breach of contract	
n) significant changes in the expected performance and behaviour of the borrower, including changes in the payment status of borrowers in the group	
o) changes in the entity's credit management approach in relation to the financial instrument (more focused monitoring)	
p) past due information, including the rebuttable presumption of 30 days past due.	

## 10.4 IFRS 9 Stage allocation – Stage 3 triggers

### Minimum triggers of IFRS 9 Stage 3 (credit-impaired) classification

Events indicative of Credit Impairment - Stage 3	Impairment Minimum Triggers (Stage 3)	Initial Assessment*
A. Significant financial difficulty of the issuer or the obligor	<ol style="list-style-type: none"> <li>1) Deterioration in external or internal rating (to rating indicating default or near default)</li> <li>2) The debtor is classified as defaulted according to Article 178 of CRR</li> <li>3) 5 year CDS peaked more than 1,000 bps within last 12 months</li> <li>4) Equity reduced by 50% within a reporting period (due to losses)</li> <li>5) Debtor has requested emergency funding with the Entity</li> <li>6) Material amount past due to public creditors or employees (e.g. &gt;€10k)</li> <li>7) Material decrease in the collateral value where the sale of the financed asset is required to repay the loan (e.g. CRE) (e.g. &gt;10%)</li> <li>8) Material increase in loan-to-value (LTV) ratio (e.g. LTV&gt;100%; change of LTV by 5%)</li> <li>9) Material decrease in turnover (e.g. &gt;20%) or the loss of a major customer</li> <li>10) Material decrease in estimated future cash flows (e.g. 20%)</li> <li>11) Current debt service coverage ratio is below 1.1</li> </ol>	
B. Breach of contract, such as default or delinquency in interest or principal payments	<ol style="list-style-type: none"> <li>1) &gt; 90 days past due on any facility at the debtor level (subject to materiality criteria)</li> <li>2) Covenant breach not waived by the bank;</li> <li>3) ISDA Credit Event declared</li> </ol>	
C. The lender of the borrower, for economic or contractual reasons relating to the borrower's financial difficulty, having granted to the borrower a concession that the lender would not otherwise consider	<ol style="list-style-type: none"> <li>1) All exposures that would be defined as forborne NPE as defined in EBA/ITS/2013/03 in last 24 months</li> </ol>	
D. It is becoming probable that the borrower will enter bankruptcy or other financial reorganisation	<ol style="list-style-type: none"> <li>1) Debtor has filed bankruptcy application</li> <li>2) Any legal entity within the group of connected clients (including subsidiaries of the debtor) has filed a bankruptcy application</li> </ol>	
E. The disappearance of an active market for that financial asset because of financial difficulties	<ol style="list-style-type: none"> <li>1) Bond trade (temporarily) suspended at primary exchange because of rumours or facts about financial difficulties</li> <li>2) The disappearance of an active market for the assets financed</li> <li>3) The disappearance of a market for refinancing options for the debtor</li> </ol>	
F. Financial instrument was purchased or originated at a deep discount that reflects the incurred credit losses.	<ol style="list-style-type: none"> <li>1) Deep discount observed at origination/purchase of the financial instrument</li> </ol>	

# 11. ECL calculations

ECL values are highly sensitive to Stage allocation

- The table below presents the 12-month ECL (for Stage 1) and LECL (for Stages 2 and Stage 3) estimates for the FGC assuming an [REDACTED] at 31 March 2020.
- [REDACTED]-ended 31 March 2020, forecasts and business plans used in our ECL estimates have been supported using the most recent management accounts available to us. These [REDACTED]. This is consistent with an observed SICR since the origination date of the FGC.
- The difference between Stage 1, 12m-ECL, and Stage 2, LECL, is primarily driven by high Lifetime PD values for instruments with residual maturities over 20 years from the reporting period-end.
- In order to estimate ECL it is normal to consider a range of scenarios including at least one central case, an upside and a downside case. IFRS 9 requires that ECL should represent a probability weighted expectation, weighted according to the probability of the loss associated with each scenario.
- The value differences between scenarios 1-3 represent the range in the [REDACTED], and sensitivity applied to the change in assumptions with regards to recovery scenarios in case of [REDACTED]. These recovery scenarios have been considered in Sections 8.2 - 8.3 of this report.
- Scenarios 4-5 reflects the [REDACTED]. Although CARE rating was linked to S&P rating BB, taking into account events in relation to the reduction in operations in Mar 2020 and COVID-19 impact, it is fair to assume downgrade to B to be the prudent approach.
- The total estimated ECL for [REDACTED]. We consider, using the assumptions stated below, that a reasonable ECL for Stage 2 is likely to be in the region of [REDACTED], being a weighted average across all five scenarios presented below.
- **Note that probabilities of the respective scenarios presented are illustrative and should be updated by management.**

Scenario	Comments	Exposure (£m)	TTC PD	12m PiT PD	LGD	Stage 1 12 month ECL (£m)	Stage 2 Lifetime ECL (£m)	Stage 3 Lifetime ECL (£m)	Probability of scenarios ECL*
1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

$$Final\ ECL = \sum p(Scenario_i) \times ECL_i$$

\*Probability of scenarios presented are illustrative and should be determined with management according to a thorough understanding of both internal and external factors



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