Euroclear Bank
CPMI-IOSCO
Disclosure Framework 2018

Responding institution: Euroclear Bank SA
Jurisdiction(s) Belgium

Authorities regulating, supervising or overseeing the FMI: National Bank of Belgium and Financial Services & Market Authorities

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This disclosure can also be found at www.euroclear.com

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Amendments to Disclosure Framework CPMI-IOSCO - September 2018

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INTRODUCTION

This document contains the disclosures relating to the CPMI-IOSCO self-assessment of Euroclear Bank, which was performed in 2018.

This document is split in 3 parts:

- the context and the methodology used to perform the self-assessment as well as the level of compliance of Euroclear Bank for each CPMI-IOSCO Principle
- a description of the role of Euroclear Bank as an FMI in the market
- a disclosure document by Principle

As will be explained further in the executive summary, the 2018 self-assessment is the result of a fundamental review of all aspects of Euroclear Bank impacted by the CPMI-IOSCO Principles. It will be followed by yearly reviews in order to update it to take into account the results of the action plans defined by Principle as well as to incorporate changes in the environment or in the products/services offered by Euroclear Bank.
EXECUTIVE SUMMARY

Context
The publication of the European regulation (EU) N°909/2014 on improving securities settlement in the European Union and on central securities depositaries (...), referred to as CSDR and related delegated legislative acts triggered a full review of EB processes and organisation. As the recitals of CSDR explicitly mention that the regulation should follow the CPMI-IOSCO Principles, EB took the opportunity of CSDR to perform a full review of its compliance with CPMI-IOSCO Principles and related disclosure.

Approach followed
The approach taken can be summarised as follows:
- multidisciplinary teams: to ensure a broad view from different angles, multidisciplinary teams have been appointed for each Principle/Key consideration
- action plans: the identified compliance gaps have been translated into detailed action plans

Euroclear Bank discusses its self-assessment with its lead supervisor as part of its ongoing supervision as operator of a securities settlement system.

Summary of self-assessment
The EB assessment by Principle is outlined below. The disclosure for each Principle is given afterwards, Principle by Principle.

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The remainder of this document provides a comprehensive description of Euroclear Bank, including the Euroclear Group dimension where relevant and a detailed outline for each of the 21 applicable Principles.
ROLE OF EUROCLEAR BANK AS AN FMI

1. Euroclear Bank in the Euroclear Group

This section provides an overview of the main entities composing the Euroclear group, the structure of ownership, the activities Euroclear pursues and the organisational structure. Further details in this respect can be found in the annual report (https://www.euroclear.com/annualreport2017/index.html).

1.1 Structure of the group

The group includes the following Central Securities Depositaries (CSDs): Euroclear Bank, Euroclear Belgium, Euroclear Finland, Euroclear France, Euroclear Nederland, Euroclear Sweden and Euroclear UK & Ireland. Euroclear Bank is the sole CSD in the group which is also authorised as a credit institution. These CSDs are referred hereafter as the operating entities of the group.

Euroclear plc is a financial holding company, ultimate parent entity of the group, which indirectly owns, through Euroclear Investments, the CSDs of the group. Euroclear SA/NV is a financial holding company and an institution assimilated to a settlement institution established under the laws of Belgium. It is the direct parent entity of the CSDs of the group and provides system development and supports services to the CSDs and other companies of the group.

Euroclear plc is a non-operating financial holding company incorporated under the laws of the United Kingdom. It owns, directly or indirectly, the entire issued ordinary share capital of Euroclear CSDs. It also indirectly owns a participation in DTCC-Euroclear Global Collateral Ltd (DEGCL) which is an equally-owned joint-venture of Euroclear SA with DTCC, set up in 2014.

Euroclear plc is predominantly user-owned and its shareholders are the 150 world’s major banks, broker/dealers and other financial institutions, most active users of the Euroclear Bank System.
The Euroclear plc Board is responsible for all shareholders matters, setting values and standards in governance matters and ensuring that the necessary financial resources are in place to meet strategic aims.

Euroclear plc is the ultimate parent financial holding company in accordance with Article 4(30) of Regulation (EU) 575/2013. However, it is exempted by the supervisory authorities from the scope of prudential consolidation.

**Euroclear Investments SA**

Euroclear Investments SA is a Luxembourg-based holding company through which Euroclear plc holds its investments in the various group operating entities and which provides various management and administrative services, such as engaging group insurance policies and providing real estate management, for the benefit of the group.

**Euroclear SA/NV**

Euroclear SA/NV is a financial holding company and an institution assimilated to a settlement institution established under the laws of Belgium. It is the parent company of the group CSDs. It is headquartered in Brussels and operates three branches in London, Paris and Amsterdam. Euroclear SA/NV delivers a range of services (system development and support services) to the group’s CSDs and other group entities.

**Euroclear Bank SA/NV**

Euroclear Bank is a Financial Market Infrastructure (FMI), a central securities depository established under the laws of Belgium. Euroclear Bank operates a securities settlement system also governed by Belgian law and provides a range of CSD services to its participants. Euroclear Bank is also authorised as a credit institution (with a limited purpose license) to provide limited banking services that support its CSD services, among which DvP model 1 settlement.

Euroclear Bank currently has opened several branches (Hong Kong, Krakow, Tokyo) and representative offices (Beijing, Dubai, Frankfurt, New-York, Singapore) which provide operational and client relationship support to Euroclear Bank headquarters in Brussels. The Euroclear Bank branches and representative offices do not have clients and do not open separate accounts.

**CSDs**

In addition to Euroclear Bank, six other Euroclear CSDs are established in the UK & Ireland, Sweden, Finland, France, Belgium and the Netherlands.

**DTCC-Euroclear Global Collateral Ltd.**

In September 2014, DTCC and Euroclear SA/NV made a joint venture – DTCC-Euroclear Global Collateral Ltd. (DEGCL) established in the UK – in order to leverage both companies’ expertise, technology and franchises, focusing on collateral processing.

Through this entity, the group aims to facilitate the automatic cross-border transfer and segregation of collateral based on agreed margin calls relating to OTC derivatives and other collateralised contracts.
2. Euroclear Bank’s business model and risk profile

The primary role of Euroclear Bank (EB) is to provide a safe, efficient and cost-effective operational environment within the markets it has links with and for the financial institutions it serves.

The group is predominantly user-owned, which impacts the way it is managed, aiming both at the protection of the group entities and the markets and participants they serve.

Euroclear Bank is increasing focus on expanding its global reach by seeking growth opportunities in both America and the Asia-Pacific regions, to support the growth and stability of the regions’ markets. In the recent years, a number of banks added Euroclear eligibility as a criteria for inclusion in their emerging market bond indices, further illustrating the strength of the Euroclear global franchise.

Given the business model, operational risk is one of the most important risk category inherent in Euroclear Bank and more generally in all Euroclear operating entities, while credit and liquidity risk arises mostly from EB’s limited banking services provided to support settlement and other CSD activities. This last risk has become an area of focus in the recent years.

Strategic risk is also high on the agenda as markets can undergo changes that could invalidate the business model and impair the capability of the group to implement its strategic initiatives, for example, as a result of financial crises, regulatory changes or, on a medium to long term, disruption due to technology and innovation.

3. Euroclear Bank’s main activities

The following sub-sections provide a more in-depth description of the services offered by EB and qualified under CSDR as core services, banking-type ancillary services and non-banking type ancillary services.

3.1 Core CSD activities

Euroclear Bank provides core CSD activities, namely securities settlement, notary services and central maintenance.

**Securities settlement services**

Euroclear Bank offers settlement services on a full range of internationally traded securities, including debt instruments, equities, convertibles, warrants, investment funds units/shares, exchange-traded funds (ETFs), money market instruments (MMIs) and depositary receipts, eligible for transfer and settlement against payment (DvP) in various currencies (over 50 currencies accepted) or free of payment (FoP). The Euroclear System is a Model 1 DvP system.

**Notary services**

Notary services are defined as the initial admission and/or establishment of certificated or dematerialised securities in book entry form. The definition refers to the initial representation and subsequent maintenance of securities in book-entry form through initial credit and subsequent credits or debits to securities accounts.
Securities issuances (or a portion thereof) are usually deposited into a CSD that is responsible for ensuring that the number of securities initially created equals the total number of securities in circulation (booked in investors’ accounts) at any time. This activity is referred to as Issuer CSD activity.

Central maintenance

Central maintenance services consist in providing and maintaining securities accounts at the top-tier level, including for example the processing of corporate actions such as dividend and interest payments or voting rights in the case of shares. This activity is also referred to as Issuer CSD activity (it is typically the case when another type of entity, e.g. a registrar, ensures the notary function).

New issues

Euroclear Bank offers services to the issuers through their agents, lead managers as well as issuing and paying agents. These services include the initial recording of the issue in the EB’s book-entry system, the allocation of a code for the issue and the processes to facilitate the distribution of the new issues. These services support the notary and central maintenance services provided by the institution.

Asset servicing

Asset servicing encompasses a range of services relating to the safekeeping of securities (bonds, equities and funds), the processing of corporate events, proxy voting, the payment of interests, dividends and redemptions, market claims and the administration of related tax services.

Collateral management services

Euroclear Bank offers Triparty collateral management services to participants of the Euroclear System in support of their bilateral repurchase agreements, securities loans, secured loan facilities, derivative transactions and marging for central counterparties to further optimise their liquidity across covered markets.

Collateral management services include deal matching, collateral eligibility verification and selection, delivery against or free of payment of collateral transfer, daily mark-to-market functions, collateral substitution, margin maintenance, custody event management and reporting.

3.2 Banking-type ancillary activities

Euroclear Bank, as a credit institution, provides banking services in multi-currency commercial bank money to support the core and ancillary services offered in the Euroclear System.

Money transfer services

Money transfer services aim at supporting participants’ cash management activities in relation to securities settlement and asset servicing. Money settlement in any of the 50 currencies accepted by the Euroclear System is carried out in the books of Euroclear Bank itself in commercial bank money, as it is not feasible or practical that Euroclear Bank and/or its participants open accounts at more than 50 central banks.
Euroclear Bank maintains a network of major local correspondent banks chosen for their high quality service and creditworthiness that provide EB with access to the national cash clearing systems.

**Credit management**

Euroclear Bank offers multi-currency intraday credit facilities to borrowing participants on an uncommitted basis within a predefined credit framework, aiming at ensuring credit granted stays within the available liquidity capacity, to facilitate securities settlement and other services available to participants in the Euroclear Bank system.

Such credit extensions, which create operating exposure, can occur when (i) participants do not hold sufficient cash reserves in Euroclear Bank and/or (ii) there are structural time lags in the flow of funds as a result of time-zone/operating hours differences.

These intraday credit extensions are fully secured by collateral (i.e. cash pledged or securities) or other recourse (i.e. Letter of credit for Bridge exposures or other equivalent financial resources like excess capital vis-à-vis capital requirements for certain exposures, as prescribed by Regulation (EU) 390/2017).

**Treasury management**

The Treasury Department combines the treasury and liquidity functions (including liquidity services provided to participants). It manages the day-to-day flows and liquidity needs of Euroclear Bank. The Treasury Department also monitors and manages the interest rate and foreign exchange risks, the balance sheet and the investment of its capital.

The Treasury Department is structured around 3 poles:

- **Liquidity Management**: mainly to support client’s securities and cash settlement activity, liquidity management services for participants and mitigate Euroclear Bank liquidity risks
- **Asset and Liability Management**: mainly to manage the balance sheet of Euroclear Bank, the investment book, FX hedging strategy, review Treasury services, set up contingency liquidity facilities and ensure compliance with regulatory requirements
- **Agency lending / General Collateral Access (GCA)**: to administer the service allowing participants to borrow securities from other participants in order for them to adjust the collateral profile they need to deliver.

Euroclear Bank does not have a trading book.

### 3.3 Non-banking type ancillary activities

**Securities lending and borrowing services (SLB)**

Euroclear Bank automated securities lending and borrowing services are designed to increase settlement efficiency. The service is an integrated component of the batch and real-time process. Participants must have credit arrangements in place with Euroclear Bank as a prerequisite to borrowing securities through the programme.

From the perspective of the borrower, the service provides a mechanism to obtain securities immediately when required for delivery if they otherwise lack such securities in Euroclear Bank. This reduces the risk of settlement failure for the borrowers and their counterparts, hence improving the overall market efficiency.
From the perspective of the lender, the programme provides a mechanism to increase security yields through securities lending fees.

**General Collateral Access (GCA)**

General Collateral Access allows participants to lend or borrow baskets of high quality securities in exchange for other collateral. Borrowers can access baskets of assets against other collateral, while lenders can earn revenues by lending in a highly secure environment, with Euroclear Bank bearing the full administrative burden.

Participants must have credit arrangements in place with Euroclear Bank as a prerequisite to borrowing securities through the programme. Similarly to the securities lending and borrowing services, a securities borrowing constitutes an extension of credit to a borrower, to cover the guarantee given by Euroclear Bank to the lender that it will be reimbursed or securities delivered.

**Funds-order processing**

Through the tailor-made automated fund order processing platform (FundSettle) allowing a centralised fund distribution on a cross-border basis, Euroclear Bank provides to its clients (in their capacity as fund investors, intermediaries or distributors): (i) order routing and processing (either subscription, redemption, switch or transfer orders), (ii) corporate action services and (iii) real-time and customised reporting facilities on funds.

**Support functions**

The group has centralised a number of support and/or control functions within Euroclear SA/NV in order to ensure consistency across the group in delivering its objectives and create more organisational efficiency.

As such, Euroclear SA/NV acts as the group service company and has contractually undertaken to provide non-operational services through outsourcing arrangements between itself and its subsidiaries. In view of the fact that Euroclear SA/NV offers services to FMIs (where business continuity is a key factor), it is subject to a specific regulatory status under the laws of Belgium.

Services centralised in Euroclear SA/NV are: IT production & development, HR, audit, legal, financial, risk management, compliance & ethics, sales & relationship management, product management, strategy & public affairs.
Principle 1: Legal basis

An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Key consideration (KC) 1: The legal basis should provide a high degree of certainty for each material aspect of an FMI’s activities in all relevant jurisdictions.

Euroclear Bank (EB) is supervised by the NBB as a credit institution pursuant to the Law of 25 April 2014 on the legal status and supervision of credit institutions (the “Banking Law”) and the Law of 22 February 1998 establishing the organic status of the NBB (the “Organic Law”). EB also has the status of settlement institution under Royal Decree n°62 on the deposit of fungible financial instruments and the settlement of transactions involving such instruments, and is recognised as a ‘central depository for financial instruments’ (Royal Decree of 22 August 2002 fixing the date of entry into force of the Law of 2 August 2002 on the surveillance of the financial market).

In addition, the NBB has designated EB as a domestic systemically important institution (referred to in the Capital Requirements Directive (CRD IV) as “other systemically important institution” or “O-SII”) under Belgian banking law and the CRD IV.

The “Euroclear System”, operated by EB, is also overseen by the NBB in accordance with Article 8 of its Organic Law.

Pursuant to article 45 of the Law of 2 August 2002, EB is also subject to supervision by the Financial Services and Market Authority (“FSMA”) for matters which fall within the competences of the FSMA.


The material aspects for EB’s activities that require a high degree of legal certainty are:

- asset protection – the protection of the holdings in financial instruments of the participants in the books of EB as well as in the books of the EB Depositories

- dematerialisation and immobilisation – legal basis for dematerialisation or immobilisation of securities

- finality – the settlement finality of securities and cash transfers

- collateral – the framework covering the guarantees (i.e. financial security interests) received from the participants to secure the credit lines granted by EB and that are ancillary to its services of central securities depository in the meaning of Regulation EU 909/2014

- contractual framework, rules and procedures – the material aspects of the services and activities of EB

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1 EB defines a Depository as a financial institution at which securities are held in custody in accordance with Section 4(b)(i) of Euroclear’s Terms and Conditions or, as required, any custody agent or other service provider, including a common service provider, appointed by EB to service securities.”
• default procedures – the rules concerning default situations. Please refer to Principle 13 for this aspect

The relevant jurisdictions for EB’s activities are:

• Belgium: Belgium is the place of incorporation of EB, and where the securities settlement system (Euroclear System) it operates is located

• jurisdictions where financial instruments are held through links, from an asset protection point of view

• the actual location or place of incorporation of participants in case of insolvency or resolution proceedings affecting those participants

• jurisdictions which are elected as governing law of certain agreements

• for securities admitted in EB as Issuer CSD and falling in the perimeter of Article 23 of Regulation EU 909/204 (CSDR), the EU Member States to which Article 49.1 of CSDR refers.

Asset protection

Belgian Law

• The Belgian legislation provides for a clear and sound basis for admission and book-entry transfers of immobilised, dematerialised or registered securities, regardless of whether or not those are governed by Belgian law. Securities are held and transferred in the Euroclear System via book-entry, under various (but similar) regimes of fungibility, depending on the nature of the securities (Royal Decree 62 on the Deposit of Fungible Financial Instruments and the Settlement of Transactions involving such Instruments, Law of 02 January 1991 on the market in public debt securities and monetary policy instrument, Law of 22 July 1991 on commercial paper and certificates of deposit, and the Belgian Companies code).

• The Royal Decree 62 and the other relevant pieces of legislation referred to above provide for a two-tier structure of asset protection, benefiting to the participants to the Euroclear System and their underlying clients. The financial instruments held with EB are protected against both the insolvency of EB and of its participants.

• By virtue of the above legislation, the securities deposited with EB never become part of the estate of EB and cannot be claimed by its creditors: the participants of EB are given by law a co-ownership right of an intangible nature on a pool of book-entry securities of the same category held by EB on behalf of all its participants holding securities of that category. The participants holding securities in the Euroclear System retain ownership on such securities, which implies they retain (i) ‘in rem’ rights on the securities, i.e. a right of ‘revindication’ of the relevant quantity of securities deposited in case of an insolvency event or bankruptcy affecting EB, and (ii) voting rights.

• Such asset protection regime does not apply to cash deposits where EB becomes the legal owner of the cash deposited with it and the depositor retains only an unsecured contractual claim against EB.

• Besides, securities and cash held with EB are by virtue of law immune from attachment by creditors of account holders and any third party.

2 EB has set up branches in Poland, Hong Kong and Japan. The securities settlement system is located in Belgium
More details are available in Rights of Participants to securities deposited in the Euroclear System which is published on www.euroclear.com.

Other jurisdictions

Before opening links with other Central Securities Depositories (CSDs) or holding securities in the context of FundSettle, EB performs an initial verification of the local legislation to ensure that securities held with such CSDs/fund issuer (agent) benefit from a level of asset protection that has comparable effects to the Belgian regime. A review of the local legislation is performed periodically.

The legal opinions notably address the following legal issues:
- the entitlement to the securities (law applicable to proprietary aspects, nature of the rights on the securities, permissibility of an attachment or freeze of the securities)
- the impact of insolvency proceedings and of crisis measures (e.g. recovery or resolution) affecting the intermediaries used by EB and/or the local CSD (segregation aspects, settlement finality, procedures and deadlines to claim the securities).

Dematerialisation and immobilisation

In Belgium, the immobilisation of securities is governed by Royal Decree 62 which provides for the possibility to hold securities with Euroclear Bank on a fungible basis and for a circulation of those securities via book-entry with a related asset protection regime (see above).

The dematerialisation of securities governed by Belgian law is implemented through laws of 02 January 1991, 22 July 1991 and 14 December 2005. The law prohibits physical deliveries on the Belgian territory, except when made between professionals and for immobilisation purposes.

Finality

Settlement finality is governed by the EU Settlement Finality Directive 98/26/EC which is implemented into the Belgian Settlement Finality law of 28 April 1999. This legislation effectively ensures irrevocability and finality of transfer orders executed in a securities settlement system (‘System’). The Euroclear System, operated by EB, is designated as a ‘System’ under Belgian law.

In case of insolvency proceedings affecting a participant to the System, the law refers to the rules of the System to determine the moment of (i) entry of transfer orders in such System, (ii) irrevocability of transfer orders (if any such moment is determined) and (iii) finality of transfer orders executed by the System. The finality rules of the Euroclear System are set out in the Terms and Conditions governing use of Euroclear (T&C) and in the Operating Procedures of the Euroclear System, which detail the three moments mentioned here above (see section 5.2). The typology of participants and the access criteria to the Euroclear System are set out in the Operating Procedures of the Euroclear System.

For securities held through links with foreign CSDs (directly or through an intermediary), the laws that are applicable to the foreign CSD apply to the local settlement of operations concerning these securities. The contractual framework of the Euroclear System explains how local laws impact cross-border settlement and settlement finality.
Collateral arrangements are governed by the Belgian Law of 15 December 2004, implementing the Financial Collateral Directive (The Belgian Collateral law), and the Belgian Settlement Finality Law. Together these laws effectively ensure the creation and perfection of financial security interests by EB.

EB obtains legal opinions (“Collateral Survey”) on jurisdictions where participants having credit lines secured by collateral arrangements to the benefit of EB are located. The opinions aim at confirming that (i) the Private International Law rules of those jurisdictions recognise that Belgian law governs the validity and enforceability of security interests granted to EB and (ii) the underlying securities in those jurisdictions would not be subject to any successful attachment or other encumbrance by or in favour of any adverse claimant. A periodic review of these opinions is performed.

Contractual framework

Please refer to KC 2 below.

Default procedures

Please refer to Principle 13.

**Key consideration (KC) 2:** An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

All rules and procedures of EB, when relevant to its participants, are embedded in EB’s contractual documentation. The main contractual documentation of EB consists of the Terms and Conditions governing use of Euroclear (T&C) supplemented by the Operating Procedures of the Euroclear System (OPs). Both documents are governed by Belgian law.

The credit facilities granted by EB are documented via specific agreements, governed by New York law (or Belgian law in certain cases).

The securities lending arrangements of the Euroclear System are documented via supplementary contractual documentation, part of which is governed by Belgian law, the other part being governed by New York law.

The collateral agreements and the general pledge provision documented in the OPs are governed by Belgian law.

The collateral management services are documented via specific contractual agreements which are governed by English law.

The consistency of the contractual framework with applicable law is ensured by scrutiny exercised by in-house lawyers and by legal opinions obtained on specific aspects, on ad hoc basis.

EB ensures that the contractual documentation is clear and understandable by:

- designing a clear contractual structure where the hierarchy and purposes of each document is unambiguous
• documenting legal and operational information in different and clearly distinguished parts of the documentation allowing to keep the documents clear for the targeted audience
• drafting legal aspects of the documentation according to professional legal drafting standards, such as Euroclear’s ‘Tone-of-Voice’ principles
• incorporating feedback from external and internal stakeholders as much as possible to enhance the clarity of such documents

The contractual documentation of EB is subject to its standard internal governance and approved by the EB Management Committee and/or Board as the case may be. There is no formal regulatory approval process for EB’s contractual documentation.

**Key consideration (KC) 3: An FMI should be able to articulate the legal basis for its activities to relevant authorities, clients, and, where relevant, client’s customers, in a clear and understandable way.**

The legal basis for the activity of EB is essentially articulated in the following documents:

- the Terms and Conditions and Operating Procedures of the Euroclear System and other related contractual agreements (please refer to KC 2)
- the Rights of Participants to securities deposited in the Euroclear System
- the Disclosure Framework

All these documents (as well as other relevant documents) are publicly available on www.euroclear.com

Concerning the fact that the legal basis is disclosed in a clear and understandable way, please see KC 2.

**Key consideration (KC) 4: An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.**

Most aspects have already been covered in KC 1 and 2.

EB operates a Securities Settlement System and Article 280 §2 of the Belgian Banking Law of 25 April 2014 provides that resolution proceedings do not affect the rights and obligations linked to participation in Securities Settlement System.

In the collateral surveys, EB assesses the risks resulting from insolvency proceedings affecting a participant on the security interest securing the credit facilities granted by EB. Further to the implementation of crisis measures in certain jurisdictions, EB also assesses the risks resulting from resolution measures affecting a participant on the security interests securing the credit facilities granted by EB. In particular, EB assesses whether stays on enforcement of security interests may be applied, and whether the relevant provisions of its contractual documentation are enforceable in insolvency situations.
Key consideration (KC) 5: An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.

EB carries out its activities in Belgium and, consequently, its rights and obligations are governed by Belgian law. However, conflict of laws issues may arise in some cases:

- when EB holds securities via links (or in the context of FundSettle) in other jurisdictions: it then obtains legal opinion on specific aspects (please refer to KC 1 under Asset Protection above)

- when EB accepts foreign securities as issuer CSD (EB performs an assessment of measures under Article 23 of Regulation 909/2014 (CSDR) to complement EB’s eligibility review of new securities issuances)

- when insolvency proceedings are opened against a foreign participant and EB has granted secured credit to this participant: the granting of collateral is governed by Belgian law; EB nonetheless ensures that foreign law applicable to the participants does not impose restrictions or additional formalities. Such foreign law conditions are identified by a recurrent collateral survey (see above)

- EB has branches in Poland, Hong Kong and Japan (Tokyo) to which operational and/or relationship management activities are transferred. Legal opinions confirm that the holding and transfer of securities in the Euroclear System remain governed by Belgian law

- EB also has representative offices in several other jurisdictions (China (Beijing), Dubai, Germany (Frankfurt), Singapore and the U.S. (New York)) which only perform general representative activities for EB. EB monitors that such limited activities remain compliant with the local regulations on representative offices
Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Key consideration (KC) 1: An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.

According to the Articles of Association of Euroclear Bank (EB), the object (i.e. purpose) of the Company is to carry out for its own account and for the account of third parties, banking activities and securities-related activities in their broadest meaning, as well as all other activities currently or in the future authorised for banks.

In this context EB operates a securities settlement system (‘SSS’) and is licensed as a credit institution allowing it to act as settlement agent of this SSS and to grant credit to participants of the SSS. EB offers a broad range of related services: asset servicing, collateral management, securities lending and borrowing and establishment of links for the purpose of cross-border settlement of transactions. These banking services are directly related to the operation of the securities settlement system and related services offered by EB to its participants.

EB’s objectives are set by the Board of Directors, on an annual basis (referred to as the ‘CEO and MC Objectives’). For 2017, the objectives focused on six areas including: regulatory, risk, customers & products, staff, financial and governance. The CEO and the MC, as a collegiate body, ensure that the objectives are met and that the performance is reviewed regularly during the year and at year-end by the Board.

The EB objectives, to the extent they focus on the activities performed in EB (i.e. not outsourced), are cascaded down to all relevant EB divisions and include detailed operational performance objectives. The EB CEO holds quarterly meetings with EB division heads to monitor those objectives.

EB outsources a number of services to its parent company, Euroclear SA/NV, which acts as the group service company. The arrangements for the provision of shared services by Euroclear SA/NV are documented in the Shared Services Agreement (‘SSA’). Services centralised in Euroclear SA/NV are: IT production & development, HR, audit, legal, financial, risk management, compliance, sales & relationship management, product management, and strategy & public affairs.

EB sets qualitative and quantitative targets and specific Key Performance Indicators ‘KPIs’ for the provision of the above services (as well as for the non-outsourced services) and on an annual basis, targets for the availability and performance of EB’s operational systems are agreed with the ESA IT divisions as part of the SSA as well. Schedule 2 Annex (a) of the SSA is being revised to explicitly foresee annual reviews. Schedule 2, including KPIs, is reviewed and endorsed by MC annually (recurring item in December of each year). For the IT divisions, Schedule 2 includes detailed performance and availability KPIs.
For the non-IT divisions, expected services and (high level) KPIs are also reviewed. More recently, EB has started to strengthen the process by including more performance targets (detailed KPIs) for these divisions.

Both IT and non-IT KPIs are assessed quarterly by the ROC and by the MC.

The 2017 objectives focused specifically on safety considerations through the risk management objectives and efficiency through the cost control objectives, which are cascaded down to the lowest levels, while financial stability and public interest considerations remain at the level of the Board and of the Management Committee (MC).

**Key consideration (KC) 2: An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, clients, and, at a more general level, the public.**

EB has a Board of Directors which is the ultimate decision-making body of the Company and has the power to carry out all acts that are useful or serve to achieve the purpose of the Company, other than those explicitly reserved by law or the Articles of Association to the general meeting of shareholders. The Board has established a number of advisory committees which provide guidance and advice on specific matters, as listed in the terms of reference of each Board committee (i.e. Audit, Risk, Remuneration and Nominations & Governance committees). The MC has been entrusted with the general management of the Company with the exception of: i) the determination of the strategy and general policy of the Company; and ii) the powers reserved to the Board by law or the Articles of Association.

The governance arrangements of EB are documented through the following documents:

- *Articles of Association*: the articles of Association describe the Object, Capital, Administration & Supervision, the General Meeting, Annual Accounts and Winding-up procedures of EB
- *Board Terms of References*: these Terms of References describe the composition, the functioning and the responsibilities and powers of the Board of directors
- *Audit-, Risk-, Remuneration-, Nominations & Governance Committees Terms of References*: the Terms of References of each Board advisory committee describe the composition, the functioning and the responsibilities of such committee
- *Management Committee Terms of References*: these Terms of References describe the composition, the functioning and the responsibilities of the MC

EB’s governance requirements are set out in Belgian and European Union legal and regulatory requirements and recommendations and other related matters.

For supervisory purposes, these arrangements are also described in the following documents:

- *Governance Memorandum*: the Memorandum describes the governance of EB, including the Euroclear group aspects. The document sets out EB’s legal and corporate structure and provides a detailed overview of its decision-making bodies (Board of Directors, Board committees, management structure) and its business organisation and values. The

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3 Euroclear Bank’s Risk, local security and Operating Committee
Memorandum is reviewed and updated annually, and is approved by the MC and the Board of Directors of EB

- *Organisational Charts*: EB has developed a set of organisational charts that outline its organisation structure

**Disclosure and accountability**

EB is a limited liability company and a subsidiary of Euroclear SA/NV. EB is accountable to its shareholders and to its supervisory authorities.

As public disclosure and transparency are key principles of sound governance, EB makes public relevant information to its stakeholders via different channels.

In addition to all publications in the Belgian State Gazette and in the financial/national newspapers pursuant to law requirements, EB makes the following data available to the owners, participants and the public:

- the Euroclear website provides information on Euroclear activities and services, operating rules for each entity including EB, as well as business developments, press releases and annual reports
- the EB stand-alone financial statements (including, for the annual accounts, the Board of Directors annual report) are posted on the Euroclear website and provide information including but not limited to financials, group strategy and corporate governance within the Group
- the CPMI-IOSCO Disclosure framework is also posted on the website

From time to time, there are also media releases, corporate brochures, and other documents made available to participants and other financial market players and the broader public.

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**Key consideration (KC) 3**: The roles and responsibilities of an FMI’s board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

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**Roles and responsibilities**

The Board has the powers to carry out all acts that are useful to achieve the objectives of EB as defined in the Articles of Association, except those that are explicitly reserved by law or the Articles to the shareholders. In carrying out this role, each Board member acts in good faith in the way s/he considers would be most likely to promote the success of EB for the benefit of its shareholders as a whole, while having due regard to the interests of other stakeholders (e.g. customers, employees, suppliers and supervisory authorities) and to public interest as well. The Board also has regard to the interests of the Group, provided the proper balance is struck between the financial charges imposed on EB and the eventual benefit to EB.

The primary responsibilities of the Board are to define and oversee the implementation of the strategy and objectives of the Company, its risk framework (including risk appetite and policies) and to supervise the Company’s management.
In defining the strategy of the Company, the Board handles any individual strategic matters as and when they arise.

The MC reports to the Board on the implementation of the agreed strategy, risk profile and financial position of the Company and all other matters delegated from the Board to the MC.

The level of control over the MC is assessed regularly by the Board as a whole as part of the Board self-assessment process which covers specifically management’s relationship with the Board.

The functioning and responsibilities of the Board have been defined in detail in the Articles of Association and its own terms of reference.

**Procedures for the Board’s functioning and Conflicts of Interest**

The EB Board meets regularly (at least five times a year, as required by the terms of reference). The Board is composed of suitable members of sufficiently good repute with an appropriate mix of skills, experience and knowledge of the Company and of the market. Additional information on the functioning of the Board is included in the terms of reference, which are reviewed annually.

EB has adopted comprehensive policies that Board members, the Management Committee and staff (including contractors), must follow in order to identify, notify, assess, properly manage and control potential and actual Conflicts of Interest (‘CoI’) including:

- Board Policy on Conflicts of interest for Board Members
- Euroclear Group Policy Handbook on Conflicts of Interest and External Mandates
- Guidelines for categorisation, assessment and determination of management measures and controls for Conflict of Interest in Euroclear

Those Group policies cover both personal and corporate conflicts, with due consideration of potential intra-group conflicts resulting from the group structure and its operating model entailing multiple outsourcing arrangements. CoI Policy documents require all board, management and staff members not only to consider and disclose the conflicts of interest they may have both personally (including via persons directly or indirectly linked to them) and when they act upon a mandate, but also to take reasonable steps to avoid engagement in activities which could create a perception of impropriety or jeopardise Euroclear’s integrity or reputation.

The Guidelines detail how to:

- categorise and assess the materiality of conflicts of interest identified or disclosed under the CoI Board Policy or the CoI Handbook
- assess the effectiveness of available management measures and controls in respect of any conflicts of interest
- implement effective management measures and controls for identified and disclosed CoI

EB seeks to limit the occurrence of material CoI situations. Euroclear Board (Committees) composition rules form integral part of this objective.

In case of an actual permanent conflict of interest, the Company will automatically apply the measures foreseen in relevant regulation (i.e. involved individuals will be excluded from the decision-making process and from the receipt of any relevant information concerning the matters affected by the permanent Conflict of Interest).
All potential or actual conflicts identified or disclosed in line with the CoI Board Policy and the CoI Handbook must be recorded either in the Conflicts of Interest Inventory or Register along with the outcome of the categorisation and materiality and manageability assessments which are required by the Guidelines. Conflicts of Interest, whether at the level of the Board of Directors or the MC, are also reported in the Board of Directors annual report and notified to EB’s statutory auditors.

**Board Committees**

In order to perform its responsibilities more efficiently and in line with legal and regulatory requirements, the Board has established the following committees exclusively composed of non-executive directors: the Audit Committee, the Risk Committee, the Nominations and Governance Committee and the Remuneration Committee.

The **Audit Committee** is an advisory committee of the Board, established to assist the Board in fulfilling its responsibilities relating to the oversight of the quality and integrity of the accounting, auditing and reporting practices of EB, the effectiveness of internal control systems and risk management systems, the adequacy and performance of EB’s Internal Audit function and Compliance function, the independence, accountability and effectiveness of the External Auditor and such other duties as directed by the Board.

The **Risk Committee** assists the Board in fulfilling its oversight of EB’s risk management governance structure, risk tolerance, and strategy, management of key risks as well as the process for monitoring and mitigating such risks (including contingency planning, cyber security, recovery plans, board policies); and such other duties as directed by the Board.

The **Nominations and Governance Committee (NGC)** reviews and makes recommendations to the Board in respect of nominations of the executive and non-executive directors of the Company, the composition of the Board and Board committees and corporate governance matters. It also sets a target for representation of the underrepresented gender on the Board and defines guidelines describing appropriate actions to reach this target.

The **Remuneration Committee** makes recommendations to the Board with respect to the total amount of remuneration and other benefits (other than those applicable to employees of the Company generally) paid by the Company to its executive Directors. It further reviews recommendations and approves the amount of annual individual remuneration of each executive director (including incentive compensation, and changes to base salary, retirement and other benefits), subject to approval by the Board of the overall amount of executive director remuneration referred to above.

The **Management Committee (MC)** has been established by the Board of EB and has been entrusted with the general management of the company with the exception of:
- the determination of the strategy and general policy of the Company
- the powers reserved to the Board by law or the Articles of Association

The MC acts in accordance with applicable laws and regulations and the rules set out in the Articles and under the supervision of the Board.

The MC reports directly to the Board and, on matters which fall within the remit of the Board Committees, the MC reports to the Board’s specific Committees which in turn report their analysis on the same to the Board.
Review of performance

The Board carries out a self-assessment and effectiveness review of the Board as a whole, the Board Chairman and the individual members. This review endeavours to ensure that the Board has the necessary framework in place within which to make decisions, focusing on the optimum mix of skills and knowledge amongst the directors, clarity of goals and processes, a culture of frankness that encourages constructive evaluation, full disclosure of procedures and an effective relationship with the MC. This annual review is carried out by completion of a questionnaire or by conducting interviews with Board members, as decided by the Board, depending on the specific needs of the Board in the year assessed.

The following elements are reviewed as part of the assessment process:

- the composition of the Board and the Board Committees, including gender diversity and independence as defined above
- the functioning of the Board (including the training of the Directors and the relationships of the Board with the Board Committees and with the MC)
- the role of the Board (including the way the strategic matters are treated by the Board and the control exercised by the Board over the MC); as well as the Directors’ involvement and attendance at meetings

The consolidated results of the assessment are reviewed by the NGC, and the results are reported to the Board for discussion. Concerns raised are followed up appropriately. The outcomes of the NGC and Board discussions as well as any agreed follow-up actions are recorded in minutes.

The Board assessment process covers the individual performance of each non-executive Director including the Chairman. The NGC, while reviewing the Board composition as well as the list of candidates proposed for re-election at the Annual General Meeting, uses the results of the assessment as a basis for its analysis. The Chairman takes steps to ensure that any areas of weak performance in the assessment are taken up with the relevant individual Director as necessary.

On a periodic basis, the evaluation of the Board is externally facilitated.

The performance of the Board of Directors as a whole is also assessed by EB’s shareholders during the Annual General Meeting, through the review of the company’s annual accounts.

Key consideration (KC) 4: The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of non-executive board member(s).

In accordance with applicable legal and regulatory requirements, Board members are appointed by the shareholders, subject to approval by the supervisory authorities. The Board submits its proposals to the shareholders regarding appointment and renewal or non-renewal of Board members. These proposals are supported by a recommendation of the NGC which assesses the applicant director against relevant selection criteria and his/her availability to perform the role. All nominations are made against merit and on the basis of the applicant director’s potential contribution in terms of knowledge, experience and skills, with a view to ensuring a balanced Board which, as a whole, has the optimum mix of skills and experience to ensure the proper fulfilment of the tasks of the Board that are appropriate for the requirements of EB’s business.
To adequately fulfil its role and responsibilities, the Board as a whole should possess the necessary balance of skills and experience to set the EB general policy and strategy and to properly supervise management in the implementation of such policy and strategy. The skills that should necessarily be represented on the Board are both generic (finance, accounting, management and organisation) and specific to the EB business (banking, operations, securities settlement, capital markets, IT).

The Board of Directors is composed of the members of the MC and non-executive directors. The Terms of Reference of the Board of Directors also foresee that at least one third of independent directors sit on the board, in line with legal and regulatory requirements. Independence is defined in accordance with the provisions of the Belgian Companies Code and taking into account the considerations of ESMA Q&A on the Implementation of the Regulation (EU) No 909/2014 on improving securities settlement in the EU and on central securities depositories) as well. The names of the independent board members are disclosed in the annual report of EB.

The overall membership of the Board and Board Committees is reviewed by the NGC with a view to ensuring the Board remains appropriately composed. The review is performed at each new board appointment, in addition to an annual overall review. The main responsibilities and operating procedures of the NGC have been defined in the Committee Terms of Reference available on the Euroclear website.

Non-executive directors who are not members of the group management receive remuneration for their mandate, taking into account their level of responsibility and time required of them in fulfilment of their Board role. It comprises an annual gross fee, an additional fee (fixed amount) for additional meetings attended and a reduction (fixed amount) for scheduled meetings not attended. Non-executive directors do not receive incentive compensation (short or long-term) or stock options or employment benefits (other than reimbursement of expenses). Their remuneration is not linked to the performance of Euroclear which incentivizes the non-executive directors to focus on the long-term achievement of EB’s objectives.

Key consideration (KC) 5: The roles and responsibilities of management should be clearly specified. An FMI’s management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.

Roles and responsibilities

The MC has been established by the Board, subject to the relevant suitability assessments and approval of the supervisory authorities, in accordance with the relevant laws and regulation and has been entrusted with the general management of EB with the exception of (i) the determination of the strategy and general policy of EB and (ii) the powers reserved to the Board by law or the Articles. The MC acts in accordance with applicable law and the rules set out in the Articles and its Terms of Reference and under the supervision of the Board.

A Chief Executive Officer has been appointed by the Board and is the Chair of the MC. Subsequently the MC has delegated to the Chief Executive Officer (‘CEO’) the day-to-day management and the representation of the Company with regard to such day-to-day management, consistently with the allocation of responsibilities between MC members decided by the MC from time to time.

The roles and objectives of the MC (including the CEO) are reviewed and recommended by the Remuneration Committee and set by the Board and are evaluated during the remuneration review process (within the scope of the Articles of Association and terms of reference).
Experience, skills and integrity

All nominations to the MC are reviewed by the NGC with a view to ensuring management has the appropriate skills and expertise to fulfil its tasks. An annual review process is in place and shared with the NGC. The nominations are made against merit and on the basis of the knowledge, experience and skills of the candidate, regardless of his/her gender or ethnic background. With respect to future potential members of the MC, the Chairman of the MC and the Chairman of the Board jointly propose to the Board the names of the candidates to be appointed as members of the MC.

The recruitment process includes a series of interviews of the candidate, an assessment of the candidate’s profile carried by reputable external consultants where appropriate as well as a check of the candidate’s professional references.

In addition, the MC as a whole should possess the necessary balance of skills and experience to fulfil its role and responsibilities. MC members receive induction training, where relevant and can request training, as needed.

Appointment and Removal of Management

The Board of Directors appoints and dismisses the members of the MC.

Key consideration (KC) 6: The board should establish a clear, documented risk-management framework that includes the FMI’s risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

Risk Management Framework

EB operates a robust and consistent framework for the identification, measurement, monitoring, management and reporting of all types of risks relevant for EB.

EB’s framework has been uplifted in 2017 (e.g. EB’s Systemic Risk Handbook, EB’s Operational Risk Policy Handbook, New Initiative, Product & Pricing Handbook) in line with new regulatory requirements (CSDR – see also Principle 3 KC 1).

The Board is committed to maintaining an overall low risk profile in line with the bank’s role as a leading financial market infrastructure with a closely guarded reputation for safety and resilience. Reflecting this, the Board has defined clear Corporate Risk Management and Operational Risk Management Board policies including a Board risk appetite statement (risk tolerance) and supporting risk strategy. These are implemented through EB’s enterprise risk management (ERM) and associated risk appetite frameworks which preserve EB’s long-term strength and ensure the trust of its key stakeholders.

EB’s ERM framework is documented in the ERM Framework Policy Handbook and is applicable to all risk types. The ERM Framework Policy Handbook acts as an umbrella reference document for all other risk specific frameworks operated by EB, including operational risk and business continuity risk frameworks. Other policy handbooks contain topic specific information and cross-reference the ERM Framework Policy Handbook as necessary.
EB’s ERM framework has been developed by Risk Management and endorsed by the MC. The MC is responsible for implementing and operating the ERM framework.

EB’s risk appetite framework (RAF) has been developed by Risk Management working in close cooperation with the Management Committee and the Board. The Board has approved a set of diverse entity-level risk appetite metrics and associated limits based on risk reward analysis and related to our strategic objectives. Metric calibration and refinement is continuing and cascade of risk limits by business/product lines will be linked to the rollout of a revised Positive Assurance Reporting (PAR) process over the course of 2018/19. Additionally, a strategy for BCBS 239 ‘Principles for effective risk data aggregation and risk reporting’ compliance is currently under development.

The Board has put in place a robust risk governance framework in which roles and responsibilities for managing risk are clearly defined. The MC and Risk Management report to the Board on the bank’s current risk position by reference to EB’s calibrated risk appetite metrics allowing the Board to determine what actions are needed to maintain our risk profile at the desired level.

With the Board established risk appetite framework as its foundation, EB’s enterprise risk management framework ensures the systematic and disciplined identification, evaluation, management, monitoring and reporting of all types of risk across all aspects of our business. Business continuity management and strong crisis procedures are also in place allowing quick escalation at EB or group level depending on the nature and the severity of the crisis. Those procedures are regularly tested.

EB’s risk strategy, risk policies and ERM framework guide the Board in its responsibility to devote the appropriate time and attention to risk issues, and oversee the implementation of the Company’s corporate strategy, in a way that preserves its reputation through risk awareness and the exercise of behaviours and values that foster a robust culture.

The three lines of defence model operated by EB facilitates the effective operation of the ERM framework. Each line plays a distinct role providing the MC and the Board with confidence that EB is likely to achieve its key goals through the effective management of risks.

For a description of the three lines of defence, refer to Principle 3, KC 1.

**Authority and independence of Risk Management and Internal Audit functions**

Risk Management (RM) and Internal Audit (IA) divisions are independent control functions, each with a board-approved Charter. RM and IA independence is guaranteed through the Chief Risk Officer\(^4\) (CRO) and Chief Internal Auditor\(^5\) (CIA) each having a direct reporting line to the Chairman of the relevant EB Board Risk/Audit committee.

Decisions on appointment and removal of the CRO and CIA are made by the Board with input from the relevant Board Risk/Audit committee, CEO and Group CRO/CIA as appropriate.

The CRO and CIA each regularly attend closed sessions of the relevant Board Risk/Audit committee (i.e. without executive directors present). Additionally, they each have unmediated access to the Chairman of the EB Board, the Board itself and members of the relevant EB Board Risk/Audit committee.

\(^4\) The role of EB CRO is currently being performed by the Group CRO on a temporary basis until a new appointment is made to this position.

\(^5\) The role of EB CIA is currently being performed by the Group CIA on a temporary basis until a new appointment is made to this position.
In addition to local resources, the CRO and CIA each have access to well-resourced Risk Management / Internal Audit Centres of Excellence (CoE) equipped to provide high quality support, advice and guidance on a range of specialist subjects. A shared service agreement is in place between Euroclear SA/NV and EB governing the provision of these services.

**Governance of Risk Management Models**

EB has developed an effective Model Risk Management (MRM) Framework.

In general, the MRM framework is aligned with EB’s ERM Framework Policy Handbook. The EB Board has ultimate responsibility for overseeing the management of model risk at EB in line with the MRM Framework Policy Handbook.

The MC develops and proposes to the EB Board appropriate model risk management arrangements - including risk appetite - that comply with laws, regulations and internal policies. This is achieved primarily through implementation and effective operation of EB’s Model Risk Management framework. The MC regularly reports to the EB Board Risk Committee on significant model risk and on compliance with this framework and arbitrates on issues reported by the EB Credit Asset and Liability Committee (CALCO) or EB Risk and Operating Committee (ROC).

Annually, EB’s independent model validator function\(^6\) provides an overview of key model validation issues (including Internal Rating (IRB) and the operational risk (AMA)) model to the EB Board Risk Committee on model risk management to facilitate effective oversight.

**Key consideration (KC) 7:** The board should ensure that the FMI’s design, rules, overall strategy and major decisions reflect appropriately the legitimate interests of its direct and indirect clients and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.

**Identification and consideration of stakeholder interests**

The user governance framework of Euroclear ensures that the interests of clients and other stakeholders are taken into account in the CSDs’ design, rules, overall strategy and major decisions.

EB has established a User Committee in accordance with the applicable legal and regulatory requirements. The User Committee is composed of representatives of participants and issuers in the securities settlement system. The Committee provides independent advice to the Board on key arrangements which impact EB users and acts as a primary source of feedback and interaction between the user community and Euroclear management. The User Committee is independent from any direct influence from the EB Board or MC.

EB also replies to consultations that are relevant for its services and users, whether initiated by regulatory bodies or law makers and participate in industry forums to ensure it remains informed of markets needs and can adapt its services as FMI accordingly. Additionally, Euroclear Bank launches a client satisfaction survey on a regular basis.

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\(^6\) *The validation function is a separate department within Risk Management and reports to the Group Chief Risk Officer. The model validation function is an independent function and may not be in charge of model development, implementation or use.*
Disclosure

Major decisions are communicated to owners (Euroclear SA/NV up to Euroclear plc user shareholders) for information or endorsement as the case may be through the ‘Notice to Shareholders’ for the annual general meeting and for each extraordinary general meeting.

Communications are made to users via the channels contractually defined and commercial account officers as well as through various publications (i.e. newsletters).
Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Key consideration (KC) 1: An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

Risks that arise in or are borne by the FMI

Euroclear Bank (EB) describes the risk categories used to facilitate risk identification and analysis in the Enterprise Risk Management (ERM) framework Policy Handbook. The key sources of risk were reviewed in 2017. For each risk category, EB defines a risk strategy that outlines its broad approach to managing and mitigating those risks.

The key sources of risk (whether direct or indirect) are:

- **Conduct & Culture risk**, arising from EB’s corporate and risk culture, governance arrangements, conduct and dealings with stakeholders, and EB’s corporate responsibility as an international financial organisation. Stakeholders include participants, shareholders, suppliers, regulators, competitors and other users including other FMIs

- **Operational risk** (see Principle 17 for additional details) including also custody risk (see Principle 16 for additional details), Model Risk, Fraud and Cyber, Business disruption and system failures

- **Legal & Compliance risk**, arising from applicable or upcoming laws, regulations, market rules and prescribed practices in all relevant jurisdictions, enforceability of contracts, conflicts of laws between jurisdictions

- **Credit risk** (see Principle 4 for additional details), arising from the default or failure of a participant or counterparty to meet their financial obligations to Euroclear

- **Liquidity risk**, arising from being unable to settle a cash or securities obligation when due resulting from inappropriate and/or insufficient liquidity sources (see Principle 7 for additional details)

- **Market risk**, the uncertainty on the value of assets and liabilities (on- or off-balance sheet) and on the future earnings (linked to foreign exchange or interest rate movements). Market risk arises from possible changes in foreign exchange rates, interest rates, equity or commodity prices

- **Strategic & Business risk** (see Principle 15 for additional details) are the uncertainties and untapped opportunities embedded in the strategic intent and how well they are executed

- **Change risk**, including considerations on programme and project management capabilities, adaptability to industry and market change

- **Systemic risk**: the risk of disruption to financial services organisations that have the potential to have serious consequences for the financial system and/or the real economy. Systemic risk events can originate in, propagate through, or remain outside of Euroclear Bank/group
Risk management policies

The ERM Framework policy handbook provides for a robust and consistent framework for the identification, measurement, monitoring, management and reporting of all types of risks relevant for EB. This policy handbook elaborates on EB’s Corporate Risk Management Board Policy and outlines key risk management roles and responsibilities, processes and risk reporting expectations.

The ERM Framework Policy Handbook acts as an umbrella reference document for all other risk types referred to in policy handbooks, such as the Financial Risk Policy Handbook (that covers among others Credit and Liquidity Risks resulting from banking ancillary services), the Operational Risk Framework Policy Handbook, the Systemic Risk Policy Handbook, the Compliance & Ethics Framework Policy Handbook, etc. These other handbooks contain topic specific information and cross-reference the ERM Framework Policy Handbook as necessary.

EB’s framework has been uplifted (e.g. EB’s Systemic Risk Handbook, EB’s Operational Risk Policy Handbook, New Initiative, Product & Pricing Handbook) in line with new regulatory requirements (CSDR\(^7\)).

EB’s risk appetite framework (RAF) was developed by Risk Management working in close co-operation with the Management Committee and the Board. The Board has approved a set of diverse entity-level risk appetite metrics and associated limits based on risk reward analysis and related to our strategic objectives.

EB’s systemic risk management framework is being reviewed in depth, to enable EB to better identify, measure, monitor, manage and report on the risks EB may pose to other entities (the focus until now was more on the risks EB was itself facing). EB is also strengthening its operational risk management framework. We elaborate on this aspect under Principle 17.

The ERM Framework also describes the practical application of EB’s risk policies and guidance, represented by the four-step risk cycle (known as ‘Risks in execution’), representing how EB goes about identifying, assessing, mitigating and reporting on its risks.

The three lines of defence model\(^8\) operated by EB facilitates the effective operation of the ERM framework. Each line plays a distinct role providing the EB MC and the EB Board with confidence that EB is likely to achieve its key goals through the effective management of risks.

Risk management systems

EB uses a Positive Assurance Reporting (PAR) process which facilitates bottom up risk identification and enables EB management to evaluate whether key risks are appropriately mitigated through the effective operation of key controls. The PAR process is integrated into the Assurance Map (AM) and Internal Control System (ICS) processes and allows the Board to take a holistic view on EB’s risk and control environment.

Further information is provided on EB’s PAR process under Principle 15 (General Business Risk), Principle 17 (Operational Risk) and Principle 21 (Efficiency & Effectiveness).

\(^7\) European Regulation 909/2014 of 23 July 2014 ‘Regulation of the European Parliament and of the Council on improving securities settlement in the EU and on central securities depositories’

\(^8\) See further in the caption “Effectiveness of the risk management policies, procedures and systems” the description of the three lines of defence
For the purpose of Risk Issue Tracking and Operational Incident Management, EB relies on two different databases: the Operational Incidents database (ROI+) and the Issue Tracking Database (I-track), working with one another and subject to regular internal audits. There are links between logged operational incidents and issues, such as control gaps and deficiencies.

The I-Track database is Euroclear Bank’s dedicated risk and issue tracking tool, which allows for effective assessment and follow-up of risks, control gaps and weaknesses that have been identified by the 1st, 2nd or 3rd line of defence. EB promotes and encourages the pro-active identification and logging of risk issues. Each issue is populated with detailed action plans that set out the specific steps needed to be taken in order to mitigate or reduce the risks faced if such risk is unacceptable as such.

The ROI+ database is the dedicated incident repository for logging operational incidents across EB. All operational incidents must be recorded in the tool, which supports a standardised workflow for the different steps of the process covered by the ‘Incident Escalation and Loss Data Collection Procedure’. All EB Divisions and Departments as well as ESA Divisions and Departments (for outsourced services) are required to use ROI+ to capture operational risk incidents. The singular corporate Incident Repository centralises all operational incident information which serves as the operational loss database.

As part of its management of business risk, and specifically the risks related to its P&L, EB uses tools for collaborative planning, budgeting and forecasting as well as for reporting and analysis purposes. We further elaborate on supporting systems in the KC 3 further down in this chapter.

Aggregation

EB monitors all risks that arise in or are borne by EB, as described above under KC 1 - financial and non-financial.

For liquidity and credit risk for instance, EB monitors the exposures on its participants and counterparts for all the roles they may have towards EB, such as treasury counterparty (for re-deposits of cash balances), participant (credit line for settlement activity, securities borrowing), issuer of securities (used as collateral by other participants, or securities that are being redeemed/pay interest) and lead manager in the new issues process.

The maximum credit limit (‘Global Family Limit’) caps the exposures from the treasury and participant roles. Next to this EB manages the cash correspondent intra-day risk through intra-day cash realignment between cash correspondents or to the central bank (NBB for EUR).

The enhanced EB PAR process is also allowing risk aggregation.

Effectiveness of the risk management policies, procedures and systems

The effectiveness of Euroclear Bank’s ERM framework, constituting EB’s risk management policies, procedures and systems, is routinely assessed by each of the three lines of defence.

- **First line:** the first line of defence consists of all but the control functions, whose role is to identify risk, as well as execute actions to manage it. The first line has responsibility for implementing and operating Euroclear Bank’s ERM framework. In so doing, the first line is
ideally positioned to identify and escalate concerns in the overall design and operation of the framework. Such concerns can be escalated either through the EB Chief Risk Officer to the Group Risk Management Division subject matter senior experts, or via the EB CEO in the Group Risk Committee.

The first line operates several risk-related processes that support the Management Committee and board-level governance oversight, enabling the effectiveness of Euroclear Bank's ERM framework to be considered as appropriate. Examples include the Positive Assurance Report (PAR) process, the Risk & control self-assessment (RCSA) process, Assurance map (AM) process, Stress tests and scenario analysis.

Additionally, EB operates a first line control unit reporting to management and tasked with routine oversight and testing of key internal controls within the entity. The first line control units is being supplemented by a network of first line risk champions to bolster the effectiveness, monitoring and reporting of risk management activities in the first line.

- **Second line – Risk Management**: Risk Management (RM) is responsible for designing, facilitating and assessing the effective operation of Euroclear Bank's ERM framework. In relation to the latter, RM uses a combination of continuous risk monitoring and analysis combined with a rolling programme of independent risk assessments to assess how effectively the overall ERM framework is operating. Key RM concerns are highlighted to the Management Committee and the Audit Committee /Risk Committee through a quarterly CRO report.

- **Second line – Compliance & Ethics**: Compliance & Ethics are responsible for monitoring, assessing and reporting to the Management Committee and the Audit Committee on the effectiveness of compliance processes and controls in relation to risk categories covering conduct & culture, legal & compliance and fraud.

- **Third line – Internal Audit**: Internal Audit is responsible for providing the highest level of independent assurance over the effectiveness of Euroclear Bank’s ERM framework. This is achieved through a programme of on-going monitoring and internal audit engagements. Key concerns are highlighted to the Management Committee and the Audit Committee through a quarterly Audit Committee Report.

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9 PAR: Positive Assurance Report ensures that the key risks and associated controls are identified in all divisions, and effectively monitored to allow timely management of risks and adjustment of the system when necessary

10 Performed by all Euroclear entities and divisions, the RCSA process is a twice-yearly management assessment of the adequacy and effectiveness of Euroclear’s risk & control framework facilitated by the Risk Management division. The RCSA process also seeks to identify any new or emerging risks that need to be addressed

11 AM is a consolidation and reporting process that seeks to combine and summarise information from the PAR and RCSA processes for review by the Management Committee and the AC/RC. Both Risk Management and Internal Audit independently review and opine on the adequacy and accuracy of management’s risk & control framework assertions

12 EB routinely conducts stress tests and scenario analysis to test the effective operation of the ERM framework. For instance, liquidity stress tests are used to evaluate whether EB holds sufficient liquidity sources to cover its liquidity requirements (See Principle 7 for more details on Liquidity Stress Testing). EB also performs regular credit risk related stress tests. For instance, in the context of ICAAP, EB tests extreme but plausible scenarios to test capital adequacy (see Principle 4 for more details).
Review of risk management policies, procedures and systems

The policy owners (for some owner being Risk Management) in consultation with the Risk Management division review policies at regular intervals, or as needed (i.e. due to changes in Regulation, market practices).

Key consideration (KC) 2: An FMI should provide incentives to clients and, where relevant, their customers to manage and contain the risks they pose to the FMI.

EB continuously invests to encourage participants to manage and contain the risks they pose to EB, by keeping them informed—through user documentation, extensive operational reporting and training, relationship (via user committee or client facing relationship) and by applying other types of measures (i.e. charges to deter riskier behaviour, sponsorship process at admission).

Client admission process

EB operates a securities settlement system (SSS). Access to the SSS is subject to admission criteria driven by risk considerations. EB has implemented a dedicated process consisting of an initial Know-Your-Client (KYC) exercise to ensure that each participant meets the admission criteria at the time of its admission and on an ongoing basis, via regular reviews. We elaborate on EB’s sponsorship process in Principle 18.

Documentation and Information

EB encourages its participants to use the system in the best way, by providing extensive information on their use and on the products and services available. This helps them to better manage their risks when dealing with EB—and therefore minimise the risk they pose to EB. Information such as Terms and Conditions, Operating Procedures, Newsletters, Product / Service Descriptions are provided both via the Euroclear website and via dedicated trainings. The Euroclear Commercial Division (Relationship and Account Managers) keeps EB’s participants informed of changes and evolution.

Due diligence information is provided to (potential) participants, for them to assess how to work with EB.

The Euroclear’s annual Pillar 3 disclosure outlines Euroclear Group’s risk management strategy, governance and policies. It summarises the risks run by the group’s entities, and in particular by EB. This report is published on the Euroclear website.

Finally, EB has established a User Committee that meets at least twice a year to exchange information with participants. EB has drafted the User Committees Terms of References along new regulatory (CSD Regulation) requirements.

Operational reporting

Euroclear Bank provides operational reporting designed to enable participants to monitor, manage and reduce the risk they face when using EB’s services. To this end, extensive information is provided to participants including:
• data on participant’s transactions
• cash and securities positions
• the amount of credit facilities as provided by EB, which are uncommitted, intra-day, secured and documented
• the credit usage
• additional real time information allowing participants to anticipate their collateral and credit needs for the day and for the next overnight processing cycle

Furthermore, EB requires all participants to reconcile their positions daily.

Incentives/Deterrent measures

Credit that is granted by EB to participants is intra-day, to facilitate the settlement of transactions (for more details, please refer to Principle 4). EB deploys large sets of measures, as defined in the Financial Risk Policy Handbook:
• all participants’ activity is fully collateralised and strict criteria on the quality of collateral are being applied with adequate haircuts (see Principle 5 for more details)
• deterrent interest rate charges to avoid overnight overdraft or excess long cash positions and thereby longer term credit exposures

Key consideration (KC) 3: An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.

Material risks

Euroclear Bank has a risk framework that has been used for years to manage the risks that it is exposed to, whether material or not.

The Enterprise Risk Management framework has been enhanced to also include the risks that Euroclear poses to other entities. This was done through the integration of systemic considerations in the framework, which aims to cover both the risks posed to EB by the financial system (e.g. other actors in the financial system, such as market participants, FMIs, service providers) and the risks EB might cause to such financial system.

Existing risk management processes and tools such as stress-testing, risk assessments, the risk library are being reviewed to explicitly include systemic considerations. On top of that, new processes and tools are being developed to further grow the systemic risk management capabilities (e.g. through interdependency maps).

Inbound systemic risks typically arise from credit, liquidity, market and operational events. The first line of defence remains therefore responsible for the integration of systemic risk considerations into their day-to-day risk management activities. Outbound systemic risk can arise from the same risk sources or from EB’s operating model. The first line should thus systematically consider in their processes both the
risks EB faces and the risks EB poses to the financial system. For details on credit, liquidity, market and operational risk management in EB, refer respectively to Principle 4, 7 and 17.

The second line of defence uses specific methods and tools, such as the horizon scanning process and regular contacts with other actors on the market, to further enhance the systemic risk framework and to challenge the first line’s views on the potential systemic impacts their activities/processes might generate.

Risk management tools

Systemic risk often crystallises in the market in the wake of a credit, a liquidity, a market, or an operational incident but the nature of the risk can change as it propagates. As a consequence, systemic risk considerations are part of the day to day risk management activities (i.e. identification, assessment, response, monitoring, and reporting).

Beside existing tools and processes used for other risk types, two new processes have been introduced specifically for systemic risk analysis: interdependency maps and horizon scanning. These processes will be further enhanced in the coming years, with further integration of their outcome in existing processes and further involvement of relevant stakeholders.

Interdependency maps are used as a tool by the first line to identify and manage systemic risk arising from our interactions with the market. These maps will be used to identify stress scenarios originating from incidents happening within EB (e.g. the temporary unavailability of one of our services) or externally, e.g. at a critical service provider or another entity in the market. The maps will eventually help us assess the potential impact of those stress scenarios on the market.

Horizon scanning refers to a series of activities that Risk Management as second line facilitates, aiming at the identification of potential emerging risks impacting EB or the financial system.

Key consideration (KC) 4: An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.

As an FMI, EB provides critical services to the financial markets.

To identify criticality, EB considers the extent to which a disruption could have adverse real economy or financial stability implications.

Furthermore, to identify these services, Euroclear takes into account a range of factors including the nature of the service, its size or EB’s business share, substitutability, interconnectedness and complexity. The services identified as critical in this context are:

\[\text{See KC 1, Principle 3}\]
• Securities settlement
• Notary services\(^{14}\)
• Central maintenance of accounts (including the processing of corporate actions)
• Asset Servicing
• Collateral management
• Ancillary banking services

Recovery plans

In accordance with regulatory rules and guidelines, Euroclear prepares recovery, restructuring and orderly wind-down (RRW) plans for EB, as well as for ESA and each CSD in the group.

Building on a broader risk framework, EB’s RRW plan aims to assist the Board and MC in taking timely and appropriate actions should EB face a situation that threatens its financial viability as a going concern and its continued provision of critical services to the market.

In particular, the RRW plan presents the EB Board’s conclusions on:
• capabilities and options:
  - alternative approaches to deal with the crystallised impact of a stress situation and their demonstrated capacity to do so effectively
  - operational plans and preparatory measures to enhance the effectiveness of the identified options

• sources of residual risk and recovery scenarios:
  - the sources of risks which, in the extreme, could threaten EB’s viability and hence its ability to continue providing its critical services
  - how, using scenario analysis as a tool, residual risk might crystallise and undermine EB’s financial position, necessitating activation of the plan

• governance and implementation:
  - the appropriate governance of decision-making in a recovery scenario arrangements for systematic review and testing of EB’s RRW plan and ongoing refinement of the plan

The preparation of such recovery, restructuring and orderly wind-down plans is coordinated by Risk Management, based on input from other divisions. The plan owner is the CEO, whose responsibility is to liaise with the different stakeholders to ensure the plan is valid, complete, properly reviewed, updated and tested.

The RRW plan is reviewed annually or when a significant change occurs that would impact the feasibility or materiality of a recovery option. As required by relevant regulations, those plans are shared with authorities.

\(^{14}\) primary acceptance of securities
Recovery scenarios

EB’s RRW plan describes various scenarios that span the range of risk sources to which EB is exposed. Each scenario comprises an “Extreme but plausible” (EBP) ‘base’ scenario that could threaten the viability of EB as a going concern if risk reduction or recapitalisation actions were not taken. In each case, sensitivity analysis considers an escalation of stress into the ‘Beyond EBP’ zone. Various combinations of scenarios are also considered. In contemplating such extreme scenarios, a certain number of control failures and a conjunction of extreme events need to be assumed.

The scenario analysis presented in the RRW plan builds on similar analysis carried out routinely by EB to size and assess the sufficiency of its capital and liquidity resources. A monitoring dashboard is used to track a range of relevant indicators that could signal a deterioration in EB’s financial situation, including any depletion of capital and liquidity relative to required levels. Specified triggers in the dashboard ensure timely escalation to decision makers to determine whether EB’s financial viability is at risk and hence whether actions should be taken under the RRW plan.

The set of scenarios included in the plan are complementary in terms of scale (idiosyncratic vs. systemic), rapidity of unfolding (slow burning vs. fast moving materialisation) and risks type (credit, liquidity, business, etc.). This ensures their adequacy to test the completeness and robustness of recovery options in the recovery plans. Relevant scenarios in EB’s current plan are:

- Default of two major participants and a market counterparty
- Clearstream Banking Luxemburg default
- Internal fraud
- Flight of participant balances in the event of a reputational shock
- Major operational incident
- Severe business loss
- Distress in another group entity

Where relevant, Euroclear analyses the consequences of similar scenarios for all entities (adapting these to reflect local entities’ specificities).

This ensures a consistent approach across group entities, and supports the analysis of the group-wide impact of any given scenarios.

Recovery options

The EB RRW plan describes in detail a large range of recovery, restructuring and wind-down options that could be taken in order to restore financial soundness of the entity after the occurrence of severe but plausible scenarios in a reasonable and appropriate timeframe.

The options considered in the plans may be categorised as follows:

- options to absorb losses and transfer risks. These options are designed directly to absorb the first-impact losses, with a view to preventing further transmission of stress and recourse to further options. Some of these options involve transferring the risk to a third party
- options to address uncovered losses or to recapitalise. These options aim to generate additional loss-absorbing capacity should losses arise beyond the level contemplated in capital-sizing decisions, or to recapitalise to restore capital to the required level
• options to address uncovered liquidity shortfalls. These options aim to support EB’s capacity to continue to meet payment obligations as they fall due in the event that liquidity needs arise beyond the capacity of available liquidity resources

• options to restructure activities. These are options to restructure activities to: reduce risk exposure, avoid further losses, or address structural weaknesses. They may be further categorised as business restructuring – e.g. urgent cost reductions or downsizing – or disposal strategies – e.g. the sale of a business line. These strategies aim to preserve continuity in the provision of critical functions and services to the wider market

• options to wind down activities. These are options directed at achieving an orderly wind-down of activities over a defined period of time (set internally at six months), again ensuring that critical services to the market are preserved uninterrupted

By supporting EB’s recovery or restructuring, or by facilitating an orderly sale or transfer, it is EB’s assessment that the effective implementation of identified options and strategies would support financial stability in the markets it serves. If successfully implemented in accordance with the plan, it is anticipated that the provision of critical functions and services provision to the market would continue uninterrupted.
Principle 4: Credit Risk

An FMI should effectively measure, monitor, and manage its credit exposure to clients and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each client fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two largest clients and their affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions. All other CCPs should maintain, at a minimum, total financial resources sufficient to cover the default of the one client and its affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions.

Key consideration (KC) 1: An FMI should establish a robust framework to manage its credit exposures to its clients and the credit risks arising from its payment, clearing and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

The Policy Framework

Euroclear Bank has established a robust policy framework which enables it to identify, monitor and manage credit risks it is exposed to.

Figure 2 Policy Framework Hierarchy

The Corporate Risk Management Board Policy lays down the key principles on risk appetite and expectations on risk culture. These are further elaborated in the Enterprise Risk Management (ERM) Framework Policy Handbook which provides a generic framework for the identification, measurement, monitoring and reporting of all risks relevant to Euroclear Bank (EB). The Financial Risk Policy Handbook supports both policies, setting out guiding principles for credit, liquidity and market risks as well as limits and collateralisation rules. This overarching policy is further complemented by Implementing Procedures which translate the guiding principles into detailed processes and procedures.
The Credit Risk Framework

As a Central Securities Depository operating a securities settlement system (SSS) with a limited purpose banking license, EB provides uncommitted multi-currency credit facilities to its participants to support their activity in the Euroclear system. As such credit risk is mainly taken on borrowing participants. However credit risk is also taken on other counterparts when performing the day-to-day balance sheet management, in particular when re-depositing participant long cash balances or investing of EB’s capital.

The credit risk framework, described in the Financial Risk Policy Handbook, sets limits based on EB’s credit risk appetite, and addresses among others the size and conditions of credit facilities for borrowing participants and market facilities to support treasury activity, concentrations and collateral quality.

Main principles:
- the granting of a credit or market facility is a discretionary decision based on an appropriate assessment of the creditworthiness and risk profile of respectively the borrowing participant or other counterpart
- the size and conditions of the facility reflect the financial soundness of the borrowing participant or other counterpart, must be in line with its EB activity and internal and regulatory limits
- credit facilities are intraday, uncommitted (aiming at settlement efficiency) and may be multi-currency. They are communicated in USD. The active monitoring of currency fluctuations may however require an adjustment to the size of the credit facilities from time to time. As a general rule, no credit or collateral value is granted for currencies in which EB has no liquidity capacity
- credit facilities are fully collateralised with collateral\textsuperscript{15} for which strict collateralisation rules apply (see Principle 5). Furthermore, collateral is held and pledged in EB and a collateral agreement must be in place to allow liquidation of the collateral in the event of a borrowing participant default

Governance

Framework documents are approved by the EB Board or the Bank’s Management Committee (EB MC) and are renewed at least annually or in case of material changes. Additionally operational processes are designed and reassessed on a regular basis to actively monitor and minimize credit risks.

\textsuperscript{15} Unsecured credit facilities are only provided when allowed under CSDR i.e. to exempt entities in accordance with Article 23(2) of Regulation (EU) 390/2017, and central banks, multilateral development banks and international organisations (other than exempt entities) of which the exposures are covered by EB’s eligible capital after deduction of the regulatory CSDR capital requirement.
Key consideration (KC) 2: An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk management tools to control these risks.

Sources of credit risk

Credit risk is defined as the risk to EB’s earnings or capital arising from EB’s obligor’s failure to perform due to inability or unwillingness on its financial obligations to EB on time and in full. EB has identified the following sources of credit risk:

1. **Credit risk arising from participants:**
   - *Settlement activities:* Settlement credit exposure (due to primary and secondary market activity) occurs when EB debits a participants’ cash account to execute a transaction for an amount above the cash available in that currency, provided that such participant has been granted a credit line and has sufficient collateral
   - *Securities lending and borrowing:* In order to support settlement activity, the Securities Lending and Borrowing program automatically generates a borrowing for the account of the participants who adhered to the program, provided that sufficient securities are available in the lending pool (i.e. securities held by lenders that are available for lending on an automatic basis) and that the applicable risk management measures are met on the securities borrower side (respect of the credit limit and full collateralisation of the position)
   - *GC Access:* General Collateral (GC) Access is a service which allows participants to borrow high-quality sovereign and supranational securities on demand (primarily for collateral management purposes). All GC Access loans are fully collateralised and borrowers have a dedicated credit limit for this activity within their global credit limit
   - *Cash services:* EB provides cash services to its participants allowing them to transfer funds in/out. EB also allows participants to use their credit line to wire out expected proceeds linked to EB services (due to different time zones and currency deadlines)

2. **Credit risk from cash correspondents & Settlement banks**:
   The role of Treasury is to manage its cash flows such that the end of day positions at the cash correspondent are within risk appetite and regulatory requirements. Credit exposure can arise from any long cash positions that EB has throughout the day (intraday credit risk) and on any residual long cash position left overnight.

3. **Credit risk from Treasury counterparties:**
   EB has treasury exposures resulting from participants’ end-of-day cash positions. These long cash positions are placed in the market with high-quality counterparties for a short duration, preferably by using reverse repurchase agreements (reverse repos) or invested in very high quality securities with relatively short-term maturities. Unsecured treasury credit exposure is allowed but kept limited. More information is included in Principle 16, KC 4.

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16 Settlement Bank is considered to be an entity appointed by Euroclear Bank or Euroclear Bank itself, that provides liquidity to support simultaneous Delivery versus Payment (DVP) settlement and/or asset servicing activities.
4. **Bridge with Clearstream Banking Luxembourg:**
   EB is exposed to credit risk in the context of settlements taking place over the interoperable link (i.e. the Bridge) with Clearstream Banking Luxembourg (CBL). The credit exposure of the interoperable link (i.e. the Bridge) with CBL is secured by means of a letter of credit issued by a consortium of creditworthy financial institutions in EB’s favour. EB is therefore also exposed to the syndicate of banks that have issued the letter of credit, however, only in the event of a CBL default (for further details please refer Principle 20 ‘FMI links’).

5. **Issuers:**
   EB purchases securities for its investment and treasury books, although the securities are highly rated, EB is exposed to the credit risk of these issuers. More information is included in Principle 16, KC 4.

As part of the on-going management of risks, new sources of credit risk may be identified through the following processes:
- risk & control self-assessments
- project risk assessments
- new product & services risk assessments
- new client admission process
- new link risk assessments
- scenario analysis and stress testing

Any newly identified source of credit risk follows a governance process described in the Corporate Risk Board Policy and relevant policy handbooks.

**Measuring & monitoring credit exposures**

Credit or market facilities are only granted to participants or treasury counterparts once an assessment of the creditworthiness has been carried out and an internal rating has been assigned by the Credit Department. The size of such facilities are determined based on risk appetite and the desired risk profile in accordance with the risk management framework.

The Credit Department performs ongoing market monitoring to capture and mitigate any deteriorating credits. It also performs regular reviews (at least annually and more frequently for lower rated participants) on the size of the credit and market facilities to ensure that they remain consistent with the creditworthiness and activity of the participant or counterpart. Any request for a new or increased credit or market facility is subject to a credit review and is only granted in accordance with the defined approval process and respective credit authority levels.

Credit exposure arises when the participant or counterpart uses its credit or market facility. Credit exposure is measured either on a gross (before mitigation and protective measures) or on a net (or residual) basis (after consideration of all mitigation and protective measures). Such exposures (gross or net) are then monitored against regulatory limits, internal limits and/or thresholds. Any exposures that are incurred outside of these limits follow a strict governance process, dependent on their nature.
The credit principles are system embedded: for example, if when settling a participant’s transaction, credit is required above the participant’s credit limit or collateral held by the participant is not sufficient to cover the transaction, the instructions are blocked by the system. In exceptional circumstances, EB can unblock the instructions by extending credit above the credit limit provided there is sufficient collateral (to be explicitly approved by a credit officer within the respective credit authority).

On a daily basis, EB monitors intraday peak exposures ex-ante, in real time, and ex-post to borrowing participants (i) at legal entity, family\(^{17}\) and at EB aggregated level and (ii) at individual currency level. For other counterparties, based on anticipated balances, exposures are diversified with different counterparties within pre-approved limits set by the Credit department in line with the risk appetite of the Bank. Cash correspondent balances are monitored real time, to ensure the balances remain within risk appetite and regulatory requirements. These end of day positions are then controlled ex post. Finally, system-embedded limits are in place to manage the exposure on Clearstream Banking Luxembourg (for more information please refer to Principle 20 'FMI links'). EB is further enhancing its framework to measure, monitor and manage its different exposures, ex-ante, on a real-time basis and ex-post.

Non-compliance with predefined limits or thresholds are escalated to the relevant governance bodies.

**Risk Management tools to control credit risk**

EB employs the following set of tools to control and mitigate credit risk in addition to its regulatory capital requirements (Article 395 of Regulation (EU) 575/2013, also referred to as CRR (Capital Requirements Regulation):

*Internal system-enforced limits* – Credit extended by EB to its participants is subject to family and individual credit limits. A Global Family Limit (GFL) is put in place to cap the maximum credit (absolute limit) provided to any single family. EB reviews the credit limits whenever required or, at least, annually.

Credit limits per currency for participants have been setup in line with EB’s ability to generate liquidity in the respective currencies.

To preserve EB’s capital, EB’s investment book can only be invested in high quality securities and according to the concentration limits defined.

**Mitigation** – Different recourses are used to cover any credit exposure that EB may incur due to default following a credit event e.g. a bankruptcy.

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\(^{17}\) A ‘family’ is a group of connected entities, identified internally by a common Global Family Name (GFN), the top of the account hierarchy. Group of connected entities is defined in Article 4(1)(39) of Regulation (EU) 575/2013
• **Collateralisation** – as a rule, credit facilities are secured with pledged collateral held in the Euroclear System: the availability of credit is dependent on the minimum between the level of the credit facility and the amount of pledged collateral. In accordance with Articles 10-11 of Regulation (EU) 390/2017, strict collateralisation rules apply concerning the quality and quantity of securities used as collateral. EB uses a four category collateral classification system. A series of credit, market and liquidity indicators are used to determine the category allocation. Any collateral that cannot be categorised in one of the four categories, is not accepted as collateral. Collateral is valued conservatively in accordance with EB’s collateral valuation model (See Principle 5).

In the event of a participant default, EB has the right to immediately appropriate the participants pledged securities (appropriation is included in the standard collateral agreement) to offset any credit exposure.

• **Set-off** – EB benefits from a unity of account provision and a contractual right of set-off, which allows it to set-off the overall credit balance of participants’ single and indivisible current accounts at any time against its debts that have not been paid when due. This means in case of default, EB has the possibility to set off participants’ exposures in one currency with long cash balances in another currency.

• **General pledge** – to the extent permitted by applicable law, EB has the right to consider as collateral all securities and cash deposited in the Euroclear System (by a participant, whether or not on behalf of its underlying clients), unless agreed otherwise in writing with a participant; EB can enforce the collateral to secure any claim that EB might have against the participant in relation with its use of the Euroclear System (the general pledge is documented contractually in the Operational Procedures).

• **Statutory lien** – EB can rely on the Belgian statutory lien on participants’ proprietary assets held in the Euroclear System; it only secures any claim against them arising from the settlement of transactions through or in connection with the System. EB has discretionarily waived such statutory lien over the balances of all securities that have been separately and expressly identified in writing by the participant as an account to which solely customer securities are credited.

For more information related to the credit mitigation recourse linked to the exposure vis-à-vis Clearstream Banking Luxembourg, please refer to Principle 20 ‘FMI links’.

**Credit reduction initiatives** – EB has developed mitigation actions and tools aiming at reducing counterparty and credit risks both for participants and EB e.g. EB is running a DVP 1 settlement system providing immediate finality of transactions in most cases. The development of mitigation actions and tools aiming at reducing counterparty and credit risks remains an ongoing exercise, either by collaborating with participants to reduce credit usage or by making changes to its systems.

**Sanctioning rates** – EB applies deterrent interest rates to discourage participant overnight credit exposures or excessive long cash positions.
Overdraft rates are composed of 3 elements (1) a central bank rate, (2) a currency factor to capture market volatility and (3) a credit factor to capture the creditworthiness of the overdrawn participant.

EB has a framework in place which ensures that its overdraft rates are more punitive than (1) borrowing rate at the Central bank, (2) overnight market rates and (3) own funding cost.

The effectiveness of these credit risk management tools is assessed through the on-going monitoring and reporting against EB’s risk appetite and limits/thresholds. Any excesses or breaches will be escalated to the appropriate decision making body in line with the applicable policy.

**Key consideration (KC) 3:** A payment system or SSS should cover its current and, where they exist, potential future exposures to each client fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its clients face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two clients and their affiliates that would create the largest aggregate credit exposure in the system.

As a rule, all participants’ credit is fully secured. Collateral is valued in accordance with EB’s conservative collateral valuation model at least on a daily basis with possible real-time adjustments when required. Any reduction in the collateral value of the participants’ pledged portfolio automatically results in a reduction of its credit usage capacity.

Potential future exposure can arise if the collateral value is not sufficient to cover the credit exposure. In order to mitigate the materialisation of any potential future exposure EB applies:

- collateral haircuts to all securities according to a conservative valuation model
- a currency margin to all cash and securities used as collateral
- an add-on to the value of any securities that are borrowed

In order to test the adequacy of the haircuts and currency margins, EB performs regular back-testing and yearly collateral stress tests. The stress tests aim at assessing whether EB can withstand severe impairments of collateral values. One of the scenarios consists in better assessing the risks in case the collateral liquidation period takes longer than envisaged in the standard collateral valuation model (i.e. 10 days). For further details, See Principle 5 on Collateral, Principle 15 on General Business Risk and Principle 7 on Liquidity Risk for the composition of financial resources to cover current and potential future exposures.

**Key consideration (KC) 4, 5 and 6 are not applicable to Euroclear Bank.**
Key consideration (KC) 7: An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its clients with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI’s process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

Allocation of credit losses

As mentioned under KC 3, as a rule, all participants’ credit is secured. Participants generally post collateral in excess of their credit usage. Accordingly, in all but the most extreme circumstances, losses would be addressed on a defaulter-pays basis via the appropriation/liquidation of participant securities collateral and other available cash balances. As set out in more detail under Principle 20 ‘FMI links’, where a loss relates to credit exposures across the Bridge, bespoke loss allocation tools are available.

In extreme and unlikely circumstances, EB could have a positive balance with a failing cash correspondent; or the liquidation value of collateral pledged by a defaulting participant, and other available cash balances, may not fully cover the credit exposure. EB would rely on its own capital to absorb any residual losses arising in such circumstances; and, in the most extreme circumstances, EB would ultimately rely on its recapitalisation and recovery capacity (see below). EB’s capital is sized with reference to EB’s risk profile, contemplating multiple participant or market counterparty defaults. Routine assessments of capital adequacy are performed, including under the annual Internal Capital Adequacy Assessment Process (ICAAP). These assessments are based on model outputs, validated by scenario analysis. The ICAAP examines, among other things, EB’s ability to withstand severe impairment of collateral values.

Replenishment and recapitalisation of financial resources and rules and procedures to address uncovered losses

Depending on the severity of the loss, EB might need to trigger actions under its Recovery, Restructuring and Orderly Wind-down (RRW) Plan. Detailed recapitalisation, recovery and restructuring options have been identified to restore EB’s capital to required regulatory minima if depleted after a stress event. EB’s recapitalisation, recovery and restructuring capacity has been sized to ensure that EB would be able to withstand losses and restore regulatory minima even in beyond extreme but plausible circumstances.

The options in the RRW plan include prompt recapitalisation either via a capital injection from the Euroclear group or via the external issuance of additional capital. Several business restructuring options are also contemplated in the RRW plan, either to reduce costs or risks, or to raise additional funds in the event of a more severe depletion of capital. Various preparatory measures have been taken to support the options elaborated in the plan. More details of the plan are included under Principle 3, KC 4.
At a high level EB foresees the following loss waterfall:

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Loss Buffer</th>
<th>Level 1</th>
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</thead>
<tbody>
<tr>
<td>Level 2</td>
<td>Loss Buffer</td>
<td>Level 2</td>
</tr>
<tr>
<td>Level 3</td>
<td>Recovery Options</td>
<td>Level 3</td>
</tr>
<tr>
<td>Level 4</td>
<td>Recapitalisation option</td>
<td>Level 4</td>
</tr>
</tbody>
</table>

In respect of Level 1 and Level 2 it should be noted that EB’s capital is sized based on its Internal Capital Adequacy Assessment Process and Regulatory requirements, further details of which can be found in Euroclear’s Pillar 3 Disclosures.

EB’s final measure in its ‘loss waterfall’ is primarily focused on recapitalisation post-loss absorption. In this respect EB envisages a call to participants on an uncommitted basis to subscribe to new equity directly in EB. Such a subscription would require enough participants to be willing to subscribe to the equity call in sufficient size in order for EB to meet the minimum regulatory capital requirement that would be required at that time. If insufficient participants were willing to subscribe to reach the required equity level, then EB would be forced to cancel the call and trigger its Wind-down Plan.

EB’s Wind-down plan is a separate plan within its RRW and effectively shuts down EB as a business. Capital and Liquidity to support the wind-down are segregated from EB’s day-to-day Risk Appetite and other regulatory requirements to ensure they are always available.

**Principle 5: Collateral**

An FMI that requires collateral to manage its or its clients’ credit exposure should accept collateral with low credit, liquidity and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

**Key consideration (KC) 1:** An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.

**Collateral framework**

The general principles and framework under which financial assets can be accepted as collateral for credit exposures are set out in the Financial Risk Policy Handbook. The framework of policies and procedures is reviewed on a regular basis (see KC 1 Principle 4).

As a rule, all participants’ credit is fully secured. This is generally obtained via a pledge of the
participant’s proprietary assets held with Euroclear Bank (EB) or other recourse that may be agreed upon on a case-by-case basis.

The collateral framework sets strict rules concerning the quality and quantity of securities used as collateral. EB only accepts collateral to secure credit exposures that meets the requirements of the Commission Delegated Regulation EU 390/2017 (implementing CSDR), which defines four collateral categories. A series of credit, market and liquidity indicators are used to determine the category allocation. Any collateral that cannot be categorised in one of the four categories is not accepted as collateral to secure credit exposure. Additionally EB (i) sets rules for the type of collateral that can be used to cover its liquidity risk, and (ii) defines a concentration limit for the lowest quality collateral. The lowest quality collateral can only be relied on to a very limited extent and within a well-defined exception framework.

The key principles for collateral acceptance (securities and cash) are as follows:

- EB has a reliable valuation methodology to derive the collateral value for each type of security, ensuring collateral value is adequately assessed under normal and stressed conditions (cf. KC 2 below)
- EB assesses the legal risks resulting from the acceptance of collateral (per relevant jurisdiction) and obtains an opinion on the enforceability of the collateral agreement
- EB actively monitors collateral to ensure that the accepted collateral covers market, credit and liquidity risk both in normal and stressed situations

Once the above aspects are covered, the security/cash goes through the normal collateral valuation process. Securities that are not eligible for collateral purposes (such as those which are not eligible in the four collateral categories) are valued at zero.

The results from the initial eligibility, collateral valuation and categorisation processes are then reviewed/updated on a daily basis, based on market data collected from data vendors, rating agencies and other departments within Euroclear.

EB does not block specific assets as collateral but calculates the collateral value of all assets held in pledged accounts and ensures that sufficient collateral is available at any time in the participant’s account to cover its credit exposure on the latter.

Should the collateral value fall below the credit facility limit, the available credit for that participant is automatically reduced to the level of available collateral.

**Standard recourse collateral**

Participants with a credit line have the following options to secure their credit exposure in EB:

- **Proprietary collateral**: participants pledge assets (i.e. assets that may be used as collateral) that are segregated from assets that cannot be pledged (e.g. underlying participants’ assets). The vast majority of participants use this type of recourse
- **Pledged cash deposits**: a participant deposits a certain amount (agreed upfront) of cash in one of its pledged cash accounts for a fixed period of time
• **Related/unrelated party arrangements**: a borrowing participant pledges proprietary collateral to support a credit facility extended to another borrowing participant (of the same and/or different family\(^\text{18}\)) provided that the appropriate documentation is in place (subject to legal enforceability validation by Legal Division)

• **Customer assets pledge**: a borrowing participant pledges collateral which belongs to the borrowing participant’s customers provided such participant has received the customers consent (subject to legal enforceability validation by Legal Division)

In the event of a participant default, EB has the right to immediately appropriate pledged securities to offset any credit exposure that the defaulting participant has. EB will then monetise or sell (“liquidate”) the appropriated securities as soon as possible.

Furthermore with other counterparts, EB uses other mechanisms for securing its credit exposure such as:

- **Reverse repurchase agreements** are used for treasury activity (and for some non-exempt entities acting as borrowing participants)

- EB uses a **Letter of Credit (LoC)** to secure the exposures it has on Clearstream Banking Luxembourg relating to the interoperable link they mutually maintain (the Bridge) [see Principle 20]

EB does not accept letters of credit and bank guarantees to secure its exposures on participants resulting from the granting of credit lines.

**Wrong-Way Risk**

Wrong-way risk can be categorised as either “specific”, which arises when future exposure to a specific counterparty is positively correlated with the counterparty’s probability of default due to the nature of the transactions with the counterparty or “general”, which arises when the likelihood of default of a counterparty is positively correlated with general market risk factors.

To address “specific wrong way risk” EB does not grant collateral value to securities belonging to the same family as the borrower (applicable for both borrowing participants and treasury counterparties).

EB is mainly exposed to “General wrong-way risk”, which arises from a decrease in market value of the collateral used to cover credit exposure, upon default of the borrowing participant. EB’s credit department monitors on an ongoing basis the participants' creditworthiness and their collateral portfolio through collateral concentration limits and thresholds to identify any significant wrong way risk. Depending on the situation, remedial actions include additional haircuts, specific concentration limits and/or limiting the credit facility.

\(^{18}\) A ‘family’ is a group of connected entities, identified internally by a common Global Family Name (GFN), the top of the account hierarchy. Group of connected entities is defined in Article 4(1)(39) of Regulation (EU) 575/2013
Valuation Practices

EB assesses the collateral value of securities held in the Euroclear System on a daily basis by obtaining prices and determining the haircut that has to be applied on each security.

The EB collateral valuation system is based on an internally developed model, which enables it to automatically calculate haircuts on all securities, taking into account credit, country, market and liquidity risks. It protects EB against a drop in prices with a confidence level of 99% over a 10 days period (Value-at-Risk).

The market value of a security is the basis for the collateral calculation. EB marks its collateral using:
- observed market prices published by official sources and received from external providers
- evaluated prices computed by external providers
- internal quotation – based on transactions settled within the system
- theoretical quotation – internal calculation based on Net Present Value methodology

There is an internal selection and control process, which selects the “best” quotation from among all the supplied quotations. The best quotation is defined as the quotation with the most recent quotation date and the most important priority level.

The primary model used to compute the collateral value to secure a participant’s borrowing (cash collateral and securities collateral value) is described below.

*Cash collateral value*

\[
\text{Collateral value} = \text{Market value} \times (1 - \text{currency margin})
\]

The valuation of cash collateral depends mainly on the currency margin and the FX rate used.

The currency margin aims at covering the FX risk that exists if the collateral is in a different currency from the exposure it covers. For settlement currencies, a 10-days VaR based on FX volatilities of each currency is calculated. The minimum currency margin is currently set at 5% (e.g. for EUR and USD).

In addition to this 10-days VaR, EB can include an additional margin reflecting the liquidity of the currency.

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**Key consideration (KC) 2:** An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.
Securities collateral value

EB defines the collateral value based on the following parameters:
- the security's market value
- the Security Value Estimation (SVE) factor: it computes a haircut to protect EB from the credit, country, market and liquidity risks related to each security
- the currency margin: as for cash collateral
- the ‘own security’ margin: it is set to ‘0’ if the participant belongs to the same family as the issuer of the security
- the Portfolio Value Estimation (PVE): if necessary, it allows to decrease the overall collateral value at participant portfolio level to compensate for some elements such as a lack of collateral diversification

Valuation is done based on both static and dynamic information received from external data providers and reviewed and controlled on a daily basis.

EB can override the automated valuation if it has reasons to consider that the current or future market price does not represent the true value (e.g. default or market stress).

For reverse repurchase agreements used for treasury activity, collateral eligibility criteria are set based on instrument type, issuer, country of issuance, rating, maturity and currency risk, haircuts are then defined based on these criteria. On a regular basis at counterparty level, the haircuts used for the reverse repo transactions are compared with the SVE, to identify any significant deviations.

Sufficiency of haircuts and validation of haircut practices

Security/currency haircuts back-test

The accuracy of the haircut valuation at security and portfolio level is verified via a back testing exercise performed daily in order to identify overall model weaknesses and take actions on defects. The haircut valuation and currency back-tests aim at ensuring that the model continues to perform within a 99% confidence level, in order to cover normal and stressed market conditions.

- Collateral stress test

The collateral stress-test looks at the adequacy of participants' collateral portfolio submitted to extreme events. The purpose is to verify if such portfolios are adequately diversified and if they would cover the credit exposures under extreme but plausible market conditions or whether credit exposures would become (partly) unsecured.
The potential impact on participants’ collateral portfolio is assessed when considering the observed collateral level but also when removing the overcollateralisation effect by capping the collateral at the level of the exposure. The scenarios to simulate different possible extreme but plausible events include:

- Default of several issuers
- Country in financial distress
- Currency depreciation
- Interest rate shock
- Stock indices shock
- Model risk

**Model review**

The Model Validation team of the Risk Management division periodically reviews EB’s collateral valuation model in line with the “Model Risk Management Framework Policy Handbook”, and provides recommendations, if needed.
As detailed under KC 2, EB applies stringent upfront selection criteria and conservative haircut criteria aimed at ensuring the continuity and stability of its policy through various economic cycles even under stressed market conditions.

For securities eligible as collateral with a Central Bank, EB applies the Central Bank haircut as a minimum. Additionally, markets are monitored daily, this allows to take progressive measures before abrupt market movements i.e. avoiding pro-cyclicality.

Collateral concentration relates to the diversity and quality of the collateral EB is relying on to mitigate both its credit and liquidity risk arising from exposure on borrowing participants and treasury counterparts. The Financial Risk Policy Handbook provides the key principles for the management of collateral concentration limits and thresholds, which are set in line with EB’s risk appetite to ensure EB’s ability to liquidate securities pledged as collateral is not impaired, and apply to the aggregate exposure on entity and/or family level. The internal policy framework foresees an annual review.

To ensure adequate quality and diversification of collateral, the EB Credit Department is responsible to monitor:
- the composition of participant’s collateral at portfolio level
- the composition of collateral received from treasury counterparties

The EB Credit Department uses the concentration thresholds and limits to identify potential concentration issues for the collateral received from borrowing participants, as well as for the collateral received from treasury counterparties (monitoring is done both ex-ante and ex-post). EB also performs ongoing market monitoring (e.g. financial press, evolution of stock prices, bond yields, CDS\(^{19}\) spreads, etc.) that allows it to identify and anticipate issues and take mitigating measures if deemed necessary e.g. increasing haircuts and implementing additional concentration limits.

Collateral concentration is monitored on a daily basis against determined limits or thresholds. Any excesses or breaches will be escalated to the appropriate decision making body in line with the applicable policy.

\(^{19}\) Credit Default Swaps
Collateral enforceability

As per CPMI IOSCO, cross border collateral has at least one of the following foreign attributes: (a) the currency of denomination, (b) the jurisdiction in which the assets are located, or (c) the jurisdiction in which the issuer is established.

Financial collateral arrangements between EB and its participants are governed by Belgian law. Relevant accounts for the purpose of financial collateral arrangements are maintained with EB in Belgium.

When accepting cross-border collateral, EB assesses legal risks resulting from conflict of laws regarding the validity of collateral arrangements and the enforceability of such collateral. Also to mitigate the impact of foreign exchange risk of cross-border collateral a currency margin (which varies dependent on the currency) is applied to all collateral.

The legal assessments are performed with the assistance of external independent law firms in order to identify any potential conflict of laws that could have an impact on the validity and enforceability of the collateral. EB obtains legal opinions for all the jurisdictions in which participants with a credit line are located. These legal opinions (“collateral surveys”) are renewed on a regular basis.

Ensuring collateral can be used in a timely manner

The timing to use (cross-border) collateral depends on the mechanism relied upon by EB and on the type of enforcement method:

- sale under the Collateral Agreement: In case of a default, the Collateral Agreement allows EB to sell (“liquidate”) the collateral of the defaulted borrowing participant, after observing a 24 hours’ notice period. If the securities are appropriated (see below) they can be sold immediately.

- appropriation under the Collateral Agreement: In case of a default, the Collateral Agreement allows EB to appropriate the collateral of the defaulted borrowing participant. The appropriated collateral can be monetised immediately. After appropriation, EB will sell (“liquidate”) the appropriated securities as soon as possible. No further formality or time period is required before proceeding with such sale after appropriation.

EB's collateral management process is automated and fully system-embedded and the collateral management team operating it is sufficiently staffed. The following tools contribute to a highly automated process:
• collateral valuation system. This tool is system embedded and is automatically refreshed daily, however, it does allow for human intervention (to adapt parameters) when required
• a system embedded tool which sets collateral criteria (such as concentration rules) at participant level
• a tool which enables EB to appropriate and liquidate collateral when a participant is in default
Principle 7: Liquidity risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the client and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Key consideration (KC) 1: An FMI should have a robust framework to manage its liquidity risks from its clients, settlement banks, nostro agents, custodian banks, liquidity providers and other entities.

The Policy Framework

Euroclear Bank(EB) has established a robust policy framework which enables it to identify, monitor and manage financial risks it is exposed to.

The Corporate Risk Management Board Policy lays down the key principles on risk appetite and expectations on risk culture. These are further elaborated in the Enterprise Risk Management (ERM) Framework Policy Handbook which provides a generic framework for the identification, measurement, monitoring and reporting of all risks relevant to Euroclear Bank (EB). The Financial Risk Policy Handbook (FRPH) supports both policies, setting out guiding principles for credit, liquidity and market risks as well as limits and collateralisation rules. This overarching policy is further complemented by Implementing Procedures which translate the guiding principles into detailed processes and procedures.

We elaborate on the policy framework under Principle 3 (Risk Management Framework).

The Liquidity Risk Framework

Euroclear Bank’s FRPH sets out the overall framework and guidelines/principles with regard to the management of both liquidity and funding risks in all relevant and non-relevant currencies arising from participants, from treasury activities as well as those arising from relations with cash correspondents, custodian banks and liquidity providers. The FRPH is reviewed and updated on a regular basis.
The EB Board of Directors defines EB’s risk appetite framework, including the liquidity and funding risks tolerance levels. For instance, EB has recently strengthened the framework under which it defines and deploys limits per currency and family\(^{20}\).

EB’s Banking Division implements the overall Liquidity Risk Management framework through its Implementing Procedures which are reviewed yearly. EB also reviews its Contingency funding plan (CFP) annually (see KC 10 for further elaboration on the CFP).

EB sizes its qualified liquidity sources (QLS) on the basis of regular back-tests and stress tests as elaborated further below under this Principle. Back and stress tests results are among other regularly reported to EB’s CALCO (Credit, Asset & Liability Committee\(^{21}\)) as we detail it further in the next Key considerations.

To manage its liquidity risk, EB has implemented:

- system embedded currency limits within the credit facility, based upon EB’s capacity to generate liquidity for each currency and EB’s risk appetite, aiming at enabling EB to withstand the default of the family with the largest payment obligation (referred to as the “Cover 1” scenario) and the default of the two largest families with the largest payment obligations (referred to as “Cover 2”)

Both the “Cover 1” and “Cover 2” scenarios consider the multiple roles the participant may have in EB, for example participants acting also as liquidity providers

- collateral criteria for participants to secure their line (e.g. ensuring a minimum percentage of assets monetisable same day) to mitigate liquidity risks

- measures to further reduce the needs stemming from participants’ activity (e.g. reducing credit usage by adapting settlement instructions practices)

- structural measures such as Appropriation of Pledged Securities (APS) clauses in case of the default of the participant

EB puts in place procedures to manage the day-to-day and intra-day needs arising from the various entities it interacts with – participants, settlement banks, cash correspondents and liquidity providers.

As one entity may play multiple roles in parallel, EB is measuring on an ongoing basis the exposures on each entity across roles. Exposure is managed using ex-ante limits and thresholds and controlled ex-post. In case an exposure on a specific entity represents a risk beyond EB’s appetite, additional measures will be taken in accordance with the Financial Risk Policy Handbook.

\(^{20}\) A ‘family’ is a group of connected entities, identified internally by a common Global Family Name (GFN), the top of the account hierarchy. Group of connected entities is defined in Article 4(1)(39) of Regulation (EU) 575/2013.

\(^{21}\) The CALCO is a sub-committee of the EB MC with some delegated authority and which provides assurance to the EB MC on liquidity, credit and market risks as well as capital matters in line with EB’s risk appetite (see Principle 2 for more details).
Considering that EB settles transactions in multiple currencies, the bank has identified the list of relevant currencies for liquidity management purposes, based on an internal methodology. The list of relevant currencies is published on a monthly basis on the EB website.

EB’s liquidity needs are mainly intra-day and mainly resulting from secured intra-day credit extended to participants, to facilitate the timely mismatch between cash debits and credits. Other potential sources of intra-day liquidity needs stem from EB’s treasury activities.

Liquidity needs may also occur over a multi-day horizon, for example linked to operations settling in the future, such as Securities Lending and Borrowing activity and outstanding Treasury activity. These operations are considered in the multi-day liquidity stress test.

In KC 3 we describe how the minimum liquidity resources for both relevant and non-relevant currencies are sized.

EB being subject to European banking legislation, complies with additional requirements related to liquidity risk management such as the Internal Liquidity Adequacy Assessment Process (ILAAP).

**Stress testing framework**

The EB Board of Directors approves the Scenario Analysis and Stress Testing Board Policy that sets out the main guiding principles of the stress testing programme, across the entire risk catalogue. This board policy also provides an actionable governance framework, with a description of the stress testing process steps, together with the identification of roles, accountability and responsibilities, allowing for a more efficient decision-making process and execution of the stress testing programme.

**Governance**

Framework documents are approved by the EB Board or the Bank’s Management Committee (EB MC) and are reviewed at least annually or in case of material changes. Additionally operational processes are designed and reassessed on a regular basis to actively monitor and minimise credit and liquidity risks. We elaborate on Governance aspects in Principle 2 (Governance) and Principle 3 (Risk Management Framework).

**Key consideration (KC) 2: An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.**

EB has implemented a tool, allowing the Treasury Department to identify, monitor, steer and control cash flows in a quasi-real time mode, assisting it to keep them within pre-established boundaries and to prioritise critical payments.

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22 In the future, the requirements set under Article 36(8) of Regulation (EU) 2017/390 will be used
This tool measures the projected and actual cash positions, resulting from movements from different activities (Money Transfer, Settlement, Custody, etc.). It is used to monitor the cash positions, identify issues throughout the day and anticipate the liquidity impacts from upcoming events in the next couple of days.

EB has built the view on its intra-day capacity linked to the availability of the various resources (committed and uncommitted) and compares them with its needs, to better assess the liquidity risk.

EB has the following ex-ante tools to identify, measure and monitor its intraday liquidity needs:

- **Analytical tools – ex-ante**
  - Report assessing intra-day current and remaining capacity by currency
  - Report forecasting the intra-day liquidity evolution based on historical timing of events in size and percentage (patterns)

- **Operational tools – ex-ante**
  - Liquidity Dashboard (LD): The LD tool gives a parallel view on actual, projected and under processing balances
  - Nostro flow control (NFC): The tool performs the liquidity check and releases the payment if there is sufficient liquidity available at cash correspondent side. The NFC provides ex-ante liquidity control (i.e. prior to payments’ release) at currency level (i.e. payment) and/or nostro level (i.e. actual balance + credit line) and makes it possible to take preventive action to decrease intraday liquidity usage (i.e. steer payments to be executed later)

- **Analytical tools – ex-post**
  
  EB measures and monitors available QLS (start of the day), peaks, outflows and overnight liquidity risk.

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**Key consideration (KC) 3:** A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the client and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.

EB does not employ a DNS mechanism.

**Minimum liquidity resource requirements**

EB sizes its QLS in order to withstand the liquidity needs resulting from a defined liquidity stress event (i.e. default at family level). This is tested using back-testing scenarios:
- “Cover 1” (i.e. a CPMI-IOSCO requirement) back-tests performed on a daily basis, simulating the default of a participant with the largest payment obligation at family level by currency and across currencies (aggregated)
- “Cover 2” (i.e. a CSDR requirement) back-tests performed on a daily basis, simulating the default of two participants with the largest payment obligations at family level by currency and across currencies (aggregated)

EB seeks to ensure on an ongoing basis to have sufficient liquid resources to cope with a “Cover 1” scenario in all currencies (relevant and non-relevant) in which credit is granted to borrowing participants, and a “Cover 2” scenario for relevant currencies. In order to have sufficient funding sources for QLS under stress, EB relies on its capital, committed unsecured facilities, the stable operational long cash balances and the intragroup contingent loan from Euroclear Investments SA.

While measures are taken to avoid such situation, any gaps identified in a liquidity back-test or a stress-test, whether at currency or aggregate levels, requires immediate actions to increase liquidity resources and/or to reduce credit limits in specific currencies.

EB is upgrading its tools and processes so that the current back and stress testing can be performed on the basis of real-time data.

To cover the day-to-day liquidity needs stemming from granting credit to participants, EB mainly relies on uncommitted and unsecured intra-day credit facilities from its cash correspondent banks, settlement banks and liquidity providers. As these uncommitted facilities may not be available during periods of stress, EB has signed committed liquidity facilities (unsecured, FX swap and repo) with various providers to increase its available liquidity resources.

**Other Stress Tests**

EB assesses the adequacy of its QLS in a range of stress events impacting negatively EB’s liquidity and/or funding position. The outcome of liquidity stress-testing scenarios is analysed and recommendations are made accordingly (e.g. on the size of liquidity resources).

The range of stress tests includes the following scenarios:
- Operational failure scenario
- Reputational incident leading to a sudden flight of participant cash balances
- IT outage at a counterpart
- Default of two major participants and a market counterparty (including knock-on implications)
- Collateral valuation stress test
Key consideration (KC) 4: A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the client and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two clients and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.

Not applicable to EB.

Key consideration (KC) 5: For the purpose of meeting its minimum liquid resource requirement, an FMI’s qualifying liquid resources in each currency include cash at the central bank of issue and at credit worthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.

EB has the following (non-exhaustive) own QLS:\textsuperscript{23}:
- cash at Central Bank account with NBB
- available cash deposited at credit worthy financial institutions
- ESCB\textsuperscript{24} eligible collateral portfolio pledged with NBB
- non-ESCB eligible in the treasury book (supported by committed repo facilities)
- maturing treasury deals
- committed unsecured lines

\textsuperscript{23} In line with CSDR definition
\textsuperscript{24} European System of Central Banks
Limits set on collateral allow EB, in stress events linked to default of participant(s), to monetise same-day collateral with its central bank (ESCB eligible securities\(^{25}\)) or with committed repo facilities.

EB relies on different liquid resources to cover its liquidity needs arising from day-to-day operations and to comply with the “stress scenarios” listed in KC 3 above. EB is taking multiple initiatives on an ongoing basis to mitigate liquidity risks and ensure its capacity to withstand a stress scenario by (1) decreasing the liquidity needs and (2) increasing the liquidity resources.

To increase liquidity resources and meet the requirements set under CSDR\(^{26}\), and recommended under the Principles for Financial Market Infrastructure, EB has taken several initiatives such as:

- signing of committed unsecured facilities, to increase the capacity under stressed conditions
- signing of committed FX swap lines, to address the multi-currency risk and the mismatch between currency of exposure and currency of the collateral
- signing of committed secured facilities, to increase the capacity to monetise participants’ pledged collateral under stressed conditions
- implementation of system embedded collateral criteria, ensuring a minimum percentage of monetisable same day assets being pledged for the purpose of a secured credit line
- ensuring that sufficient cash is invested on an overnight basis (next day availability) and more secured investments are executed against same day monetisable assets
- optimising the composition of EB’s portfolio of securities

The prearranged and highly reliable funding arrangements have been signed with creditworthy financial institutions having access to the central bank of the applicable currency(ies).

In order to establish that these arrangements are highly reliable in extreme but plausible market conditions, EB ensures that:

- each entity has a central bank access to the currency of the facility, which increases the likelihood of receiving the cash from such entities in time of stress
- each entity is considered a creditworthy financial institution
- each entity is tested at least quarterly

When a defaulting participant has signed an “Appropriation of Pledged Securities” (APS) agreement, EB can immediately monetise pledged collateral with:

- the NBB for ESCB-eligible collateral
- liquidity providers via committed repo arrangements

\(^{25}\) marketable financial securities accepted as collateral by the Eurosystem as assessed by the national central banks according to the criteria specified in the Eurosystem legal framework for monetary policy instruments.

\(^{26}\) European Regulation 909/2014 of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories.
The effective availability of the committed liquidity sources depends on:

- the quality of the securities (from participants, reverse repos, treasury book and investment book)
- the cut-off time by liquidity provider and/or by currency
- the nominal currency of the securities and of the committed facilities

Through the Liquidity Back Test, EB measures daily that it has sufficient QLS to manage the default of at least the participant with the largest payment obligation by currency.

**Key consideration (KC) 6: An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.**

EB’s supplemental liquid resources are composed of:

- regularly tested pre-arranged uncommitted funding arrangements such as FX swap and Repo facilities
- borrowing capacity and uncommitted cash correspondent lines

These liquid resources are not considered to be available under stressed conditions, when assessing EB’s capacity to cope with a liquidity/funding stress event as part of the different stress testing scenarios.

A methodology has been designed to determine on a monthly basis, the amounts that are considered as uncommitted liquidity capacity by time-bucket and currency (based upon day to day activity).

EB ensures a close follow-up of the additional liquidity capacity and can decide whether actions are required to maintain or adapt this capacity.

In both day to day and stress situations, EB would first try to use the uncommitted facilities (i.e. the supplemental liquid resources) before using the QLS even if, in stress situations, the likelihood of using uncommitted facility is lower than in a day to day situation.
Key consideration (KC) 7: An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a client of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider’s performance reliability with respect to a particular currency, a liquidity provider’s potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.

EB manages relationships with a wide range of liquidity providers.

EB’s Network Management Policy Handbook defines criteria in terms of service quality, cost and risks (operational, credit, business and liquidity) with which EB’s liquidity providers have to be compliant.

EB ensures the ability of its committed liquidity providers to manage associated liquidity risk through a thorough due diligence process. Further enhancements of the current Due Diligence Process are ongoing (e.g. collecting additional information on liquidity providers).

EB imposes the following rules to its committed liquidity providers:
- the entity must have access to credit from the Central Bank of the currency of the facility
- the entity is a credit worthy financial institution (cf. Due Diligence Process)
- a written contract is put in place with detailed rights and obligations of both parties
- the liquidity facility provided is quarterly tested

EB has developed a testing framework whereby:
- facilities are tested at least quarterly
- supporting tools are tested yearly

Operational readiness, training and documentation is validated during the combined testing of facilities and supporting tools.

The test is deemed successful if the provider has respected the rules set in the contract.

EB’s FRPH defines concentration limits to avoid over-reliance on specific liquidity providers, both at the level of major currencies and at aggregated level across all currencies, especially on those that were also acting as borrowing participant.
EB has an account at the National Bank of Belgium (NBB) providing a direct access to TARGET2 for EUR payment. This account also support its activity in a number of T2S CSDs. When available, EB may consider opening cash accounts at other Central Banks.

To support day-to-day payment activity in many currencies, EB relies primarily on a large network of cash correspondents and the associated uncommitted intraday credit lines. For EUR, the intraday capacity is mainly relying on the assets pledged to the NBB.

EB will seek to increase the number of central banks to whom it can have direct access to. EB will attempt to become its own Settlement Bank where settlement cross-border volumes are substantial.

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**Key consideration (KC) 8:** An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

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EB uses stress testing and sensitivity analysis to assess the potential liquidity impact and the adequacy of its QLS in each currency under a variety of extreme but plausible scenarios, based on both observed exposures (back-tests) and stressed exposures/situations (stress tests). Stress testing is an integral part of the ILAAP\(^{27}\) annual review of the adequacy of the liquidity framework and resources.

Despite the fact that cover 1 compliance is achieved by design, Euroclear Bank runs a daily back-test for the “Cover 1” scenario through a semi-automated\(^{28}\) process. The results of the back-testing exercise will trigger immediate action, should any issue be identified, and be reported by the Risk

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\(^{27}\) *Internal Liquidity Adequacy Assessment Process*

\(^{28}\) *Further initiatives to strengthen the automation and industrialisation of stress-testing are underway*
Management Division to the Euroclear Bank CALCO for endorsement and approved by the Euroclear Bank Management Committee upon recommendation by the Euroclear Bank CALCO.

At group entity level, exposures considered in the back-tests arise from the cash credit exposure in their role of participants and from the treasury deals maturing in their role of treasury counterparts. If an entity of the group in default is also a liquidity provider, the liquidity facility is disregarded accordingly.

In its stress tests, Euroclear Bank also considers the exposure resulting from potential participants’ Securities Lending & Borrowing usage and their role as cash correspondents.

Focus is set on a 1-day horizon for the back-tests while stress tests assess the potential liquidity and funding implications over a longer period of time. As a result of ongoing initiatives the period of time simulated in EB’s stress-tests will be further extended in the future, for instance up to the expected liquidation period in case of default and collateral appropriation (APS).

The stress tests are part of the annual stress testing campaign while, on top of it, some additional ad-hoc stress tests are performed following internal Risk Management initiative (to test some specific underlying risks), Banking Division (to support and/or back-test decisions taken) or on specific request from the supervisory authorities.

Stress-tests are not only allowing to assess the adequacy of liquid resources vis-à-vis intra-day liquidity needs but also to address the operational processes to cope with the liquidity stress events. The types of scenario’s simulated during EB’s stress tests (some of which including combinations of stress events) are discussed under KC 3 above.

In its recovery plan, EB assesses the expected implications of each scenario to capture the second round/contagion effects from both a qualitative and quantitative perspective.

If the results of the liquidity back-tests and stress tests highlight some shortfalls or shortcomings, the Banking Division and/or Risk Management provide recommendations to EB CALCO as to the measures that could be taken to address the situation.

The FRPH sets the list of minimum stress events that need to be considered. In addition, annually, EB assesses the feasibility to extend the list of scenarios to incorporate additional stress events that would be relevant for EB. EB also combines multiple scenarios/stress tests to build master scenarios dealing with either concomitant or subsequent stress across the entire risk catalogue (including liquidity and funding risks). The below table provides an overview of the stress tests and the assumptions they cover.

At least on a yearly basis, EB organises a desktop exercise covering an operational or financial incident. These tests also cover crisis management of credit and liquidity risks.

In the context of the scenario analysis methodology, we have rolled out a structured process for gathering systematically relevant insights in order to generate a scenario. An important part of this is Horizon Scanning, which takes place at least semi-annually and involves a range of Euroclear staff. The aim is to identify and discuss potential internal and external threats, across multiple categories, which can then be reflected in stress scenarios.
Before performing a stress test, all assumptions and parameters are systematically and completely reviewed during the stress test scenario definition. In order to do that, we rely amongst other on a liquidity dashboard which is produced on a daily basis. It contains liquidity indicators based on:

- general market metrics (Forex, Interest rates, equities)
- specific market metrics (CDS)
- EB internal metrics (participant balances, LCR, QLS)

In the context of a program to improve its stress testing framework and infrastructure, EB is further elaborating its capacity to assess second round effects. Such development will also improve, among others, the automation of consistent stress-testing runs (allowing more frequent runs) and apply a systematic approach for the currencies covered.

**Key consideration (KC) 10:** An FMI should establish explicit rules and procedures that enable the FMI to effect same day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its clients. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI’s process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

Euroclear Bank (EB) has a Contingency Funding Plan (CFP) that will be triggered following, amongst other scenarios, the default of a participant.

The Contingency Funding Plan (CFP) is approved by the EB Management Committee and the EB Board. It sets a series of stress events that EB should be able to cope with, without the need to activate its recovery procedures (i.e. all liquidity generating and liquidity preservation actions available to manage a liquidity/funding crisis) and is reviewed annually.

The purpose of the CFP is to:

- establish a monitoring program to identify, analyse, report, escalate and respond to, in a timely manner, EB-specific or market-wide events (triggers) that could lead to a liquidity strain under progressively worsening stress conditions, where different levels of escalation and required responses incorporate both objective measures and management discretion
- provide an overview of the governance process in place in crisis situations
- identify significant Liquidity Stress Events and outline a framework for assessing their impact on EB’s ability to maintain access to funding markets, preserve its liquidity position, meet its financial obligations and continue to perform its role as a CSD, including the provision of ancillary banking services
- provide a flexible menu of management actions aligned with EB’s role as a CSD based on current and potential sources of liquidity and a framework to assess the availability and liquidity value of such sources during Liquidity Stress Events
• describe the process for selecting, prioritising and executing management actions, including replenishment of liquidity sources, during Liquidity Stress Events and the monitoring of such actions effectiveness when executed

• establish the governance process for the maintenance, review and approval of this CFP, including the role of the EB Board and Board Committees

• establish the roles of EB Management Committee (MC), Credit and Asset and Liability Committee (CALCO) and the Liquidity Crisis Management Team (LCMT) to direct the execution of management actions and the EB divisions to execute such actions and report back on their effectiveness

• establish and maintain a EB CFP Communication Plan

• establish the requirement for a CFP testing program, including the periodic liquidation of liquid securities, test of committed lines (including repos and foreign exchange swaps) on a sample basis

The CFP is a multi-layered plan comprising a Board level document (framework document), which is complemented by:

• the daily liquidity dashboard for monitoring of EB’s liquidity situation

• a related procedure on management actions and replenishment actions in case of crisis (i.e. a Replenishment Plan)

At a high level EB foresees the following liquidity waterfall:

<table>
<thead>
<tr>
<th>Level 1 Liquidity</th>
<th>EB’s own liquidity pre-funded on balance sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2 Liquidity</td>
<td>Defaulting Participants’ collateral that can be monetised same day</td>
</tr>
<tr>
<td>Level 3 Liquidity</td>
<td>Agreement by non-defaulting participants to have a limited access to part of their long cash balances in the EB system at the time of the liquidity need</td>
</tr>
</tbody>
</table>

In respect of Level 1 and Level 2 it should be noted that EB’s liquidity is sized based on its Internal Liquidity Adequacy Assessment Process and Regulatory requirements. Specific regulatory requirements include the Liquidity Coverage Ratio and Net Stable Funding Ratio Requirements as required by the Capital Requirement Regulation (EU 2013/575), as well as the “Cover 2 test” required by the Central Securities Depository Regulation (EU 2017/390). The latter drives EB’s requirements under Level 2 Liquidity and ensures that EB can by design survive the default of the two participants to which it has the largest intraday liquidity exposure.

The Level 3 liquidity measure is designed to address unforeseen liquidity shortfall scenarios and would only be used when the other two Levels have been exhausted. EB will only resort to the unforeseen liquidity shortfall measure if it has exhausted its own liquidity, after taking all possible measures to reduce its liquidity needs (e.g. credit line management and debit positions management) and increase its available liquidity (e.g. through committed and uncommitted
facilities). This measure is a contractual arrangement with participants as stipulated in the EB Terms and Conditions and EB Operating Procedures.
Principle 8: Settlement finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Key consideration (KC) 1: An FMI’s rules and procedures should clearly define the point at which settlement is final.

Settlement finality is governed by the EU Settlement Finality Directive 98/26/EC which is implemented into Belgian Settlement Finality law of 28 April 1999. This legislation effectively ensures protection of irrevocability and finality of transfer orders executed in a securities settlement system (‘System’). The Euroclear System, operated by Euroclear Bank, is designated as a ‘System’ under Belgian law.

In case of insolvency proceedings affecting a participant to the System, the law refers to the rules of the System to determine the moment of (i) entry of transfer orders in such System, (ii) irrevocability of transfer orders and (iii) finality of transfer orders executed by the System. The finality rules of the Euroclear System are set out in the Terms and Conditions governing use of Euroclear (T&C) and in the Operating Procedures of the Euroclear System. This documentation is available on the Euroclear website.

EB operates a securities settlement system (Euroclear System) and offers settlement as an issuer CSD.

The Euroclear securities settlement system is a Delivery vs. Payment (“DVP”) Model 1. More information is provided within these disclosures under Principle 12.

Euroclear Bank also maintains links with other CSDs (directly or through an intermediary) to enable its participants and participants of such other CSDs to transfer securities to one another. One of those links (link with Clearstream Banking Luxembourg, called Bridge) qualifies as interoperable in the meaning of Regulation (EU) 909/2014. For securities held through links with foreign CSDs (directly or through an intermediary), the laws that are applicable to the foreign CSD apply to the local settlement of operations concerning these securities. The contractual framework of the Euroclear System explains how local laws impacts cross-border settlement and its impact on settlement finality. For fund shares deposited with Euroclear Bank using the FundSettle service, the contractual framework also specifies the settlement process for settlement of such fund shares.

For all links it maintains, Euroclear Bank does not make provisional credits on accounts, except for the (indirect and direct) links with DTC. In this case, Euroclear Bank prohibits retransfer of these securities until they become final.

The reader can find further considerations on links in the Principle 20.
The point of finality of a transfer depends on whether the transfer is done within the Euroclear System (i.e. transfer between two participants having an account in Euroclear Bank, referred to in the rules of the System as internal settlement), via the Bridge (i.e. transfer between a Euroclear Bank and a Clearstream Banking Luxembourg participant, referred to in the rules of the System as Bridge settlement), via another link (i.e. transfer between a Euroclear Bank participant and a participant of the other CSD with whom Euroclear Bank maintains a link, referred to in the rules of the System as external settlement) or through the FundSettle service:

- **Internal settlement**: the settlement of an internal Instruction is final upon execution and the credit/debit of Accounts. As such, the simultaneous transfer of securities and transfer of cash (if against payment) is final at such time. Provided that all conditions for settlement are fulfilled (e.g. instructions are matched, sufficient cash/credit or securities are available, settlement date has been reached), this execution of internal settlement instructions and generation of records occurs either:
  - at the end of an overnight securities settlement batch during the night
  - in real time, during the day, for the real-time processing

- **Bridge settlement**: Euroclear Bank’s Operating Procedures detail the finality rules for receipts and deliveries from and to Clearstream Banking Luxembourg over the Bridge. Securities transfers over the Bridge in the overnight batch are final upon confirmation of acceptance of securities by the receiving CSD. Securities transfers over the Bridge in the real-time processing are final upon successful execution and credit to the Securities Clearance Account (for receipts) or when Clearstream Banking Luxembourg records the credit of securities (for deliveries)

- **External settlement**: settlement and finality occurs in the local market in accordance with local market rules and practice. This is also the case for fund shares deposited with Euroclear Bank in the FundSettle service. For links, the online market guides provide a detailed document available on [www.euroclear.com](http://www.euroclear.com)

### Key consideration (KC) 2: An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.

EB’s settlement process consists of an overnight batch process followed by a real time gross settlement process.

The batch process runs from around 22:30 on the day before the settlement ("S-1") to around 01:30 on the settlement day (S), Settlement finality occurs at the end of the overnight batch.

The daytime process runs from around 01:30 to 19:30 Central European Time and provides final settlement in real-time.
With the exception of unsettled instructions sent through LCH Clearnet for London Stock Exchange transactions, the Euroclear System recycles unsettled instructions from one process and one day to another until the settlement or the cancellation of the instruction.

Participants will receive real-time notifications of this settlement through the communication channel they subscribed to.

To facilitate settlement efficiency, Euroclear Bank offers the following services/features:

- credit facilities: Euroclear Bank may - under certain conditions and subject to limits (see Principle 4) - provide credit to the participant
- Securities Lending and Borrowing Programme: participants may also - under certain conditions - borrow securities by subscribing to the Lending and Borrowing Programme
- settlement optimisation features, such as technical netting which also reduces credit usage and therefore collateral needs of EB’s participants in the settlement cycle

| Key consideration (KC) 3: An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant. |

Instructions are irrevocable when they can no longer be cancelled by participants as described in the Operating Procedures which are publicly available on Euroclear’s website.

Cancellation instructions must be sent by the input deadline of the settlement process for which instructions are eligible for settlement (i.e. received and validated but not yet executed by Euroclear Bank). After this input deadline, instructions become irrevocable.

The input deadline depends on whether the instructions are to be processed in the internal settlement, Bridge settlement or external settlement:

- **Internal settlement:**
  for instructions entered in the system before the settlement date (and that are eligible to be settled during the overnight batch), cancellation instructions must be received before 22:00 Brussels time on the day before the intended settlement date to be taken into account in the overnight process.
  Settlement instructions entered during the real-time processing dated settlement date settle in principle immediately (provided they are matched and sufficient cash and securities are available). If they have not settled yet, they can be cancelled until the input deadline (19:00 at the latest).

- **Bridge settlement:**
  the input deadlines are 20:30 Brussels time on the day before the intended settlement date (overnight securities settlement processing)

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29 For these, unsettled instructions are cancelled End-Of-Day.
or 17:25 at the latest for the real-time processing dated settlement date (for optional against payment instructions).

- **External settlement:** the deadlines for external instructions depend on the local market rules. The online market guides detail these deadlines on euroclear.com.

After the above mentioned deadlines, instructions become irrevocable for clients.
**Principle 9: Money settlement**

*An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.*

**Key consideration (KC) 1: An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.**

Euroclear Bank (EB) does not conduct its money settlements in central bank money.

EB is a central securities depository established under the laws of Belgium that operates a securities settlement system (governed by Belgian law) and that is also authorised as a credit institution (limited purpose banking license). Euroclear Bank indeed acts as settlement bank of the securities settlement system it operates. Therefore, money settlement in all eligible settlement currencies is carried out in the books of Euroclear Bank itself in commercial bank money.

Settlement through accounts opened with the National Bank of Belgium (euro) is not practical and available for the following reasons:

- **EB offers new issues distribution and settlement in over 50 different currencies to an international participant base. This makes settlement in central bank money not a practical option as all Euroclear Bank participants have cash accounts in all of the available settlement currencies where they perform settlement activity in the books of Euroclear Bank (where settlement of the cash leg is effected by crediting and debiting the available participants’ cash accounts in the available currency)**

- **central bank money settlement in euro could only be offered to those clients having a cash account with the National Bank of Belgium. However, a limited number of EB participants have access to central bank money euro liquidity or credit through the National Bank of Belgium. Moreover, central bank money settlement would only be an option if both parties to the transaction have access to NBB. This limits further the practical use of such service**

- **access to the central bank for participants is primarily required for monetary policy operations, where securities are pre-deposited on a free of payment basis with the relevant central bank and liquidity made available in the central bank’s system Target 2. This means that, for the participants needing those, monetary policy operations can be handled without using a delivery versus payment mechanism central bank money in the securities settlement system**

For the links it maintains with other central securities depositories, Euroclear Bank operates using central banks and/or cash correspondents. For many currencies, Euroclear Bank has more than one cash correspondent in place for risk/contingency purposes.

For settlement in most CSDs on T2S (Austria, Belgium, Italy, Spain, Finland, France, Germany, the Netherlands and LuxCSD), Euroclear Bank uses its central bank account at NBB.
As settlement takes place in the books of Euroclear Bank, the settlement asset used is a claim on Euroclear Bank itself, an AA+ rated bank. Euroclear Bank is subject to Regulation EU 909/2014 and its banking license is a limited purpose banking license.

Credit and liquidity risks stemming from the use of cash correspondents and depositories are covered under Principles 4 (Credit Risk) and 7 (Liquidity Risk). Details on how Euroclear Bank manages collateral to mitigate credit risk can be found in Principle 5 (Collateral).

This Key consideration is not applicable, as no settlement banks are used in Euroclear Bank to support money settlements for participants in the Euroclear System. All participants have a cash account directly with Euroclear Bank. Aspects related to FMI links are covered under Principle 20.

Euroclear Bank has a limited purpose banking license that allows it only to offer banking services and credit facilities that are ancillary to its core services as central securities depository under Belgian law and soon under Regulation 909/2014 (CSDR). All Euroclear Bank participants have cash accounts in the available settlement currencies in the books of Euroclear Bank. Money settlements are conducted by debiting or crediting the cash accounts of the participants that are counterparties in a securities transaction or for the sake of making payments related to corporate actions affecting the securities held in the Euroclear System.

Euroclear Bank has established an enterprise risk management (ERM) framework which provides for a robust and consistent approach to risk management across the organisation and covers all key sources of risk including credit and liquidity risks. For more details on Euroclear’s risk management, the reader can refer to the Principle 3 (Risk Management Framework). Euroclear Bank’s liquidity risk management is explained in Principle 7 including aspects of liquidity management per currencies, while Credit Risk is covered under Principle 4. Details on how Euroclear Bank manages collateral to mitigate credit risk can be found in Principle 5 (Collateral).

Credit and liquidity risks stemming from cash correspondents and depositories are covered under Principles 4 (Credit Risk) and 7 (Liquidity Risk).
Key consideration (KC) 5: An FMI’s legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.

This Key consideration is not applicable, as Euroclear Bank is acting as settlement bank of the securities settlement system it operates. All participants have a cash account directly with Euroclear Bank.
Principle 10: Physical deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

Key consideration (KC) 1: An FMI’s rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.

Euroclear Bank (EB) does not offer settlement services relating to commodities.

EB securities settlement services are based on immobilisation or dematerialisation of securities. Please refer to Principle 1 for more details.

EB holds physical securities through its network of Depositories in the local markets. Detailed information on the markets in which physical settlement is possible at EB, is available online on my.euroclear.com (in the “market basics” pages of the “Knowledge base” app).

Physical securities are immobilised at a Euroclear Depositary. Relevant delivery addresses for physical settlement are provided on my.euroclear.com > My Apps > Market directory.

Please note that the number of physical securities considered here is particularly marginal (representing well below 1% of settlement).

The Operating Procedures of the Euroclear System clearly state the specific rules in relation to the receipt and delivery of physical instruments. These procedures are available on the Euroclear website.

Key consideration (KC) 2: An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.

As stated above, EB is not involved in the settlement of commodities.

EB identifies the physical form of securities and adapts its processes for their receipt and delivery accordingly (see KC 1 above). When securities are held in physical form, Euroclear Bank’s due diligence procedures foresee:

- a yearly vault inspection that includes a physical verification of securities in the vault
- self-assessments from international depositaries/agents

Euroclear Bank's insurance policies include coverage for losses of physical securities. For physical securities, Euroclear Bank appoints depositaries to safekeep the securities in their vaults, and to service them on behalf of Euroclear Bank and its participants. Contractually, EB
requires those depositories to protect physical securities and use vaults whose design and location ensure high level of protection against a series of disasters (floods, earthquakes, fire, etc). Such depositories are being regularly monitored as defined in Euroclear Bank Network Management policy handbook. For instance, EB’s Network function performs annual vaults inspections on entities maintaining immobilised physical securities on its behalf. The vault inspection ensures that agreed standards are effectively in place in terms of protections of securities.

Euroclear Bank requires an annual certification from the depositories detailing the securities which are being held in the vaults in accordance with the depository agreement.

In case of shipment of physical securities (for example in case of a change of depository), strict procedures are being followed to ensure compliance with insurance requirements of both Euroclear Bank and the depository making the shipment.
Principle 11: Central Securities Depositories (CSDs)

A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimise and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry.

| Key consideration (KC) 1: A CSD should have appropriate rules, procedures, and controls, including robust accounting practices, to safeguard the rights of securities issuers and holders, prevent the unauthorised creation or deletion of securities, and conduct periodic and at least daily reconciliation of securities issues it maintains. |

For all securities held in the Euroclear System, Euroclear Bank (EB) has appropriate rules, procedures and controls to safeguard the rights of the securities issuers and holders and prevent unauthorised creation or deletion of securities. EB applies the Belgian and European accounting principles, which are summarised in CBFA Circular 2007-7:

- participants assets and own assets should be completely separated (Principle 2 of the Circular)
- the following accounting principles should be used (principle 4 of the Circular):
  - accounts should be of the type of assets and liabilities accounts
  - double-entry accounting according to the debit-credit principle
  - balance between debit and credit at all times
  - daily booking, without delay, of transactions
  - simultaneous booking of the securities and cash leg

The initial setup of the ISIN code in the Euroclear system is managed by a separate and stand-alone process. The creation or deletion of securities is executed by other processes managed by the transactional teams. There is a clear segregation of access and duties between both processes (setup and transactions) and teams who manage these processes.

EB performs two reconciliations:

- **Securities movement reconciliation**, between the movements recorded at EB and those recorded at the depository of a transaction (Settlement, Corporate Action,…). EB performs this check on a daily basis for all the security categories in the Euroclear System, covering all counterparts (the EB T&C refer to a generic concept of “Depositories”)
- **Balance reconciliation** on a daily basis (reconciliation as issuer CSD, reconciliation for FundSettle and for the Investor CSD activity)

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30 This is a prudential supervision standard, issued by the prudential supervisor CBFA (since 1 April 2011 NBB). CSDR does also contain provisions on asset segregation.
Immediate corrective actions are taken in case EB identifies a mismatch.

Booking of securities positions is performed upon receipt of securities to be credited to participant accounts. Removal of these securities positions is performed upon final maturity or in the context of a corporate event (e.g. exchange). Both credit and debit of securities are processed in an automated manner at EB upon participant instruction and depository confirmation. The 4-eyes or key & re-key\(^{31}\) principles are applied to manual processes. In case of a wrong credit or debit of securities, internal controls performed by the transactional teams or the reconciliation process will detect the error and appropriate actions will be taken by means of a reversal process\(^{32}\). EB reports on a daily basis to participants, the movements in their accounts.

Euroclear’s Internal Audit regularly reviews these procedures and controls. Furthermore External Auditors audit those on a yearly basis. The yearly ISAE (International Standard on Assurance Engagements) 3402 report, which is available to participants and authorities, includes the results of such external reviews. This report of EB provides assurance on the key operational processes impacting customers. It describes the controls performed end-to-end (in particular new issues, settlement or custody instructions and reconciliation procedures) to ensure there are sufficient securities to satisfy customer rights. The effectiveness of controls is tested by the external auditors.

### Key consideration (KC) 2: A CSD should prohibit overdrafts and debit balances in securities accounts.

EB’s processing systems are designed to prevent securities overdrafts, debit of balances and securities creation. The Terms and Conditions governing use of Euroclear (T&C) clearly provide that ‘Debit balances or overdrafts in Securities Clearance Accounts are prohibited in the Euroclear System’.

In practice, the system therefore controls the availability of the cash and securities provisions before executing the instructions. If the cash and/or the securities are not available, the transaction will not be settled. EB only credits securities positions upon receipt of securities to be credited to client accounts.

In EB’s cross-border settlement activity, several intraday controls, detection and mitigation actions are in place within the settlement department to detect any situation where a participant could possibly cancel a settlement instruction while execution in the local market would already have taken place. In addition, there is a daily monitoring of short positions, performed by investigation team. System embedded blocking is being developed.

\(^{31}\) Another user re-performing the same task

\(^{32}\) Described in Section 3.2 of the Operating Procedures
Two operational improvements have been deployed:

- **Cross-border settlement**
  
  With regard to external deliveries (i.e. deliveries in the CSD with whom EB maintains a link) instructed by participants, additional system changes have been deployed to prevent participants from being able to cancel their instructions in EB without the appropriate local market authorisation.

- **Market claims in the context of rights distributions**
  
  Another exception relates to the Asset servicing domain. For certain types of corporate actions, if a participant receives securities on an ex-entitlement basis and onwards delivers those on a cum-entitlement basis without arranging to purchase the entitlement separately, the Euroclear system does not automatically prevent the delivery to settle. The consequences are that:
  
  - the participant delivering short can temporarily go in overdraft
  - for such short position, the exposure of EB on the participant is temporarily not secured

Any short positions are detected and monitored by EB’s operational departments and actions are taken accordingly.

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**Key consideration (KC) 3:** A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry. Where appropriate, a CSD should provide incentives to immobilise or dematerialise securities.

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EB provides book entry settlement exclusively for securities in an immobilised or dematerialised form. In other words, securities are never delivered physically for settlement to take place in EB’s books.

Physical securities can either be global notes (representing the total issued amount deposited in the Euroclear System) or physical certificates which can possibly circulate outside of market infrastructures.

In EB, physical securities may only be physically delivered at the moment they enter or exit the Euroclear system, i.e. either at the moment of issuance/redemption (typically for global notes) or as a result of physical deposit/withdrawal by a participant. A deposit in the Euroclear System implies the immobilisation of physical securities (safekeeping in a vault) while a withdrawal implies a physical delivery of securities. Once securities are in EB’s system, transactions involving such securities only take place by book-entry.

To be eligible in EB, physical securities need to be immobilised with a CSD or with a Depository:

- out of the securities issued in a Common Depositary structure or securities issued as Eurobonds but not held in Common Depositary structure, 99.9% is issued as a physical

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33 Please refer to Principle 1.

34 In Belgium, physical deliveries can only take place between professionals and for immobilisation purposes.
certificate (e.g. Classical Global Notes, New Global Notes, etc.) and immobilised in the vaults of the depositories. The remainder (0.1%) are issued in dematerialised form.

- for the domestic securities recorded in the Euroclear system (held through the links), the majority are issued in dematerialised form or in the form of a global note. The remaining are issued in a physical form and therefore immobilised.

Practically, the volumes of physical deposits and withdrawals are negligible and such services are only offered through a limited number of EB’s depositaries.

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**Key consideration (KC) 4: A CSD should protect assets against custody risk through appropriate rules and procedures consistent with its legal framework.**

A. Participants’ assets are legally protected (under the Royal Decree N°62) against EB’s creditors, including in case of bankruptcy of EB.

B. Current legal framework (among others CRR\(^{35}\) and CSDR\(^{36}\)) prohibits EB from using participants’ assets without their consent.

C. Protection of participants’ assets from loss due to EB itself is achieved through:
   - EB’s accounting practices and internal controls: Euroclear’s accounting practices and the internal controls impacting participant services are audited on a regular basis by Internal Audit and yearly basis by External Auditor. The result of such external annual audit is disclosed on yearly basis in the ISAE 3402 report. More detailed description in KC 1 of this Principle. Please refer also to D below
   - segregation of EB participants securities from EB’s proprietary securities: (see KC 5 hereafter for more details)

D. Reconciliations are designed to identify any error quickly in order to avoid erroneous creation or deletion of securities, whichever the cause thereof. Reconciliation and investigation measures are further described in the KC 5 of the current Principle. In case:
   - EB is at the source of an error, it has appropriate insurance coverage in place
   - an FMI counterpart or link is at the source of an error, the counterpart’s insurance should come into play. This is being monitored by the Network department of Euroclear as part of the annual due diligence exercise, during which EB raises a set of questions on the insurance coverage and request insurance recertification. Residual damages uncovered by an insurance claims payment will remain the liability of the counterpart

E. EB has procedures to select its counterparts (see Principle 16). Furthermore, EB contractually imposes to its counterparts to maintain insurance coverage with respect to securities held on behalf of EB. Before opening links with other Central Securities Depositories (CSDs), EB performs

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\(^{35}\) Regulation 575/2013 of 26 June 2013 on prudential requirements for credit institutions and investment firms IV

\(^{36}\) Regulation 909/2014 of 23 July 2014 on improving securities settlement in the European Unions and on CSD.
an initial verification of the local legislation to ensure that securities held with such CSDs benefit from a level of asset protection that has comparable effects to the Belgian regime. A review of the local legislation is performed periodically (see Principle 1 and Principle 20).

**Key consideration (KC) 5:** A CSD should employ a robust system that ensures segregation between the CSD’s own assets and the securities of its clients and segregation among the securities of clients. Where supported by the legal framework, the CSD should also support operationally the segregation of securities belonging to a client’s customers on the client’s books and facilitate the transfer of customer holdings.

Segregation at participant’s level on EB’s books is based on participants' specific account structure requirements, so participants can segregate their securities and cash as they require.

EB offers to its participants the possibility to choose the level of segregation (omnibus accounts or client dedicated accounts) they require in its books. Such client choice will have no impact on the level of asset protection granted to the participant under Belgian law.

An EB participant can indeed request the opening of additional accounts; it must indicate whether these accounts contain proprietary or participant assets.

At EB, participants can structure their accounts according to their needs and those of their clients: i.e. ranging from one omnibus account to separate accounts (single or several securities accounts) per function, business line or clients.

EB has set up an appropriate structure for the purpose of holding its proprietary securities in the Euroclear System, which ensures adequate legal segregation, both in the books of EB and in the books of EB depositories/counterparts.

**Key consideration (KC) 6:** A CSD should identify, measure, monitor, and manage its risks from other activities that it may perform; additional tools may be necessary in order to address these risks.

To support its services of notary and central maintenance and settlement services, EB offers two types of ancillary services (in the meaning of CSDR):

- Non-banking type ancillary services related to Custody and Asset Servicing (corporate actions, proxy voting, tax services, collateral management services and other services related to settlement)
- Banking type ancillary services (including credit facilities and money transfer)

Before being offered to participants, every potential new service has to go through an approval process documented in the EB policy framework, during which the impact of this new service on the risk profile of EB is assessed. The risk assessment (performed by the business with the
assistance of the Risk Management Division) identifies all potential risks and mitigating actions. The full process is described in EB’s “New Initiative, Product & Pricing Policy Handbook”.

The impact on the capital requirements is also analysed.

The EB’s Risk, local security and Operating Committee (ROC) – composed of senior officers – and, for banking type ancillary services, the bank’s CALCO\(^{37}\) review the risk assessment paper and the contemplated new services, adding sometimes conditions or recommendations for consideration by the relevant decision-making body.

For more information regarding risks related to the banking type ancillary services offered by EB, please refer to the other Principles in these disclosure and in particular Principles 3 (Risk Management Framework), 4 (Credit Risk), 5 (Collateral) and 7 (Liquidity).

The continuous identification, measurement, monitoring and management of EB’s risks (including those linked to the related services) occur via Euroclear’s Enterprise Risk Management (ERM) framework (see Principle 3). Principles 4 and 7 include description of potential credit and liquidity risks respectively. In case there are financial risks (credit, liquidity and market) it requires a separate review that needs to go to the CALCO.

\(^{37}\) Credit Asset & Liabilities Committee
Principle 12: Exchange-of-value settlement systems

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Key consideration (KC) 1: An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.

Euroclear Bank (EB) operates a securities settlement system (Euroclear System) and offers settlement as an issuer CSD. The Euroclear System is a designated securities settlement system notified to ESMA.

The Euroclear securities settlement system is a Delivery vs. Payment ("DVP") Model 1: internal and Bridge instructions are settled between participants on a transaction (gross) basis. The finality of the transfer of securities from the seller to the buyer occurs at the same time as the finality of transfer of funds from the buyer to the seller.

EB maintains links with other CSDs, to facilitate transfer of securities between its participants and the participants of the other CSDs. Those links are DVP links. When settlement occurs through links, the settlement does not take place in EB. Rather, the settlement takes place in the local market and is then reflected in EB books. For cross-border instructions, local rules apply.

The DVP arrangement in the Euroclear System operated by Euroclear Bank is supported by the relevant legal and contractual framework as well as the technical framework. It ensures that delivery of securities takes place if, and only if, cash is received. Practically, the system controls the availability of the cash and securities provisions before executing the instructions (i.e. so-called ‘positioning’). If the cash and/or the securities are not available, the transaction will not be settled (but will be recycled later on in accordance with the system’s rules). If the cash and/or the securities are available, the instructions will settle and the cash and securities will be transferred simultaneously.
Settlement over the Bridge with Clearstream Bank Luxembourg ("CBL") is also organised on a DVP Model 1 basis. Securities transfers over the Bridge with CBL are final based on different rules for the overnight and real-time settlement process as described in the Operating Procedures of the Euroclear System which form part of EB Terms and Conditions, available on Euroclear’s website. Detailed documentation is also provided in the online market guides, available on www.euroclear.com.

Participants can also settle transactions via Free of Payment (FoP) instructions.

Please also refer to Principle 8 on Settlement finality.
Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Key consideration (KC) 1: An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a client default and that address the replenishment of resources following a default.

EB’s contractual documentation covers both operational default and financial default as meant by CPMI-IOSCO.

Operational default

Participants in the Euroclear System are subject to admission criteria, one of which is regarding the operational and technological capability aiming to ensure business continuity (see Section 2.1.2(e) of the Operating Procedures of the Euroclear System). Operational capability is monitored via the sponsorship process. Non-compliance with the admission criteria can result in suspension or termination of access.

Access rules and procedures (to the extent relevant to participants) are documented in the Terms and Conditions Governing Use of Euroclear (T&C), which encompass the Operating Procedures of the Euroclear System (OPs).

For more details on Access, please refer to Principle 18.

Financial default

EB, as operator of the Euroclear System, has effective and clearly defined rules and procedures to manage the default of one or more of its participants. The default rules and procedures (when relevant to participants) are embedded in the T&C and OPs, which differentiate two types of default (see section 3.8 of the OPs):

- the inability to fulfil the obligations imposed to participants under Euroclear’s contractual documentation, i.e. a contractual default, which includes inter alia the obligation to have adequate financial resources (see section 2.1.2(e) of the OPs) and to pay Euroclear’s fees (see section 13 of the T&C)

- insolvency situations, defined in accordance with the Settlement Finality Directive 98/26/EC (SFD) and the Belgian Settlement Finality Law of 28 April 1999 (SFA)
Regarding insolvency situations, EB’s rules and procedures also follow the principles laid down in the Settlement Finality Directive (SFD) and the Settlement Finality Act (SFA).

EB also acts as settlement agent for participants in the Euroclear System and provides banking-type ancillary services in this capacity. The rights and obligations of EB as settlement agent granting credit to participants are documented in the T&C as well as in separate agreements between EB and the participant (the Collateral Agreement Governing Secured Borrowings by Participants in the Euroclear System and the General Conditions Governing Extensions of Credit to Participants in the Euroclear System). The actual actions taken by EB, as settlement agent, when managing the consequences of a participant’s default are discretionary (within the limits of the contractual arrangements) and are determined on a case by case basis depending on the situation.

EB’s detailed contractual framework (the Rules):
- reflects the principles and requirements provided in the SFD and SFA in relation to “event of default” as defined thereof (i.e. the opening of an insolvency proceedings against a participant) and sets out the other events that also qualify as default in the meaning of this Principle
- sets out the actions EB must take as operator of the Euroclear System (T&C) and may take as settlement agent upon occurrence of default events (T&C and other relevant credit and collateral documentation)
- sets out the rights and responsibilities of defaulted participants

EB further implements the Rules with internal procedures. The objective of default management procedures is to:
- respect the SFA for refusal of incoming instructions and processing of pending instructions where applicable (for both proprietary and customer transactions, which are treated the same way. EB only has a contractual relationship with the participant. For more details, please refer to Principle 19) and thereby limit disruptions to the functioning of the Euroclear System
- avoid or minimize losses for EB resulting from the outstanding exposures of a defaulted participant, by liquidating/monetising defaulting participant’s collateral (replenishment of resources) in a prudent and orderly manner

For more details on settlement finality, please refer to Principle 8.
For more details on credit risk, collateral and liquidity risk, please refer to Principles 4, 5 and 7.

Identification of default

EB has in place an active monitoring of its participants in order to identify a participant’s default and take remedial actions as contractually available or as mandated by the SFA where applicable. The objective is to capture any deterioration in creditworthiness of the participant well ahead of its potential default and therefore to pro-actively manage exposures. Mitigation actions target to minimise any credit risk and consequently any liquidity risk. These actions will vary according to the severity of the crisis.

EB collects information allowing identifying potential crisis or default, takes mitigating measures and, where legal or contractual conditions are met, will put the participant in default. The collected information includes:
• market signals, external and/or internal rating changes, press reports and other market information
• direct notification by other relevant channels (e.g. regulators)
• notification by the participant itself (as required by the T&C)

Management of default

Once a participant default (financial or operational) is identified and confirmed, the Crisis Management Process, supported by the Group Business Continuity & Assurance (GBCA) team, is activated to coordinate the default management responses, including the prevention of incoming instructions where applicable and the monetisation and/or liquidation of participants’ assets, where relevant.

The roles and responsibilities of internal departments involved in the default management are described in the EB Insolvency Guidelines and Business Continuity Plan – Client Default, which are reviewed and updated at least annually. They also highlight the interaction of the internal stakeholders with external stakeholders such as the defaulting participant’s administrator or curator or the liquidation agents and counterparties, which would be used for the execution of defaulting participant’s assets or to generate liquidity.

The default management procedures include a close cooperation and communication with the appointed insolvency administrator/liquidator/curator to support a smooth liquidation of the assets held by the defaulting participant in the Euroclear System. The regulator will also be informed of the situation.

GBCA regularly reviews, tests and amends the process, where necessary.

Use of financial resources

EB acts both as operator and as settlement agent of the Euroclear System for DVP (delivery versus payment) transactions. As settlement agent of the Euroclear System, EB extends credit to its participants. All credit lines are fully secured with collateral. For more details, please refer to Principles 4 and 5. In the event of default, and as documented in the Rules, collateral posted by the defaulting participant would be monetised (via appropriation of pledged securities) and/or liquidated to meet any existing/arising obligations which cannot be covered by EB’s right of set off under the T&C (Section 16).

For more details on how EB manages liquidity risks stemming from default of one or more of its participants, including the Contingency Funding Plan which describes the order in which the financial resources can be used for the replenishment of resources, please refer to Principle 7.

For more details on the measures EB could take in the context of a financial default affecting Clearstream Banking Luxembourg (CBL), please refer to Principle 20.

EB has also established a Recovery, Restructuring and Orderly Wind-down (RRW) plan in accordance with applicable requirements stemming from the banking legislation and CSDR. Such
RRW plan elaborates on stress scenarios with related recovery options (including capital increase, intragroup funding etc).

| Key consideration (KC) 2: An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules. |

Operational default in the meaning of CPMI-IOSCO is managed via the Access rules and related procedures. For more details, please refer to Principle 18 on Access.

Financial default, whether or not resulting from the insolvency situation of a participant, is managed in accordance with applicable legislation and contractual provisions (see section 3.8 of the OPs).

As operator of the Euroclear System, EB has documented in its T&C and OPs the rules it applies in the context of insolvency proceedings affecting a participant for processing of pending instructions (entry, irrevocability and finality of instructions). For contractual defaults, the T&C detail the conditions applicable to such defaults, their consequences and the options available to EB (including the procedural aspects like notifications to the concerned participant).

In respect of a participant’s insolvency situation, EB always applies a set of standard actions:
- preventing the entry into the system of new instructions
- blocking the Accounts, cash and securities positions
- handling pending instructions
- informing the receiver/administrator/trustee/curator, if any

The process may however be complemented by other actions depending on the type of services the defaulted participant uses and whether it has a credit line.

For credit lines granted by EB as settlement agent of the Euroclear System, the consequences of insolvency proceedings and of a contractual default are documented in the Collateral Agreement Governing Secured Borrowings by Participants in the Euroclear System and the General Conditions Governing Extensions of Credit to Participants in the Euroclear System.

As part of its risk management framework, EB has established a global business continuity management strategy and procedural framework to ensure adequate awareness and readiness for EB’s crisis management response in a series of incidents, including the default of a participant.

The business continuity management strategy defines the sequencing of actions in the context of an operational/financial crisis and provides an overview of the roles/responsibilities of the various parties. For more details on the risk management framework, please refer to Principle 3.

The EB Insolvency Guidelines detail the specific steps to be taken by EB in compliance with applicable legislation and contractual arrangements to manage the consequences of insolvency proceedings affecting a participant of the Euroclear System.
EB maintains internal procedures and processes to manage financial defaults that do not originate from insolvency proceedings.

EB’s Business Continuity Plan – Client Default and EB Insolvency Guidelines define the communication path of a participant default to all relevant internal and external stakeholders, including the authorities.

Banking Implementing procedures describe the Roles and Responsibilities.

All default management processes and procedures are reviewed and tested at least annually in order to ensure their adequacy and effectiveness.

Key consideration (KC) 3: An FMI should publicly disclose key aspects of its default rules and procedures.

EB’s T&C and OPs (the Rules) are publicly available (www.euroclear.com) and detail all aspects that are relevant for participants in case of default when EB acts as the operator of the Euroclear System:

- the OPs sets out the admission criteria to become a participant in the Euroclear System that the participants must meet on an ongoing basis
- the T&C list the events that may trigger the suspension or termination of the participation of a participant in the Euroclear System
- the OPs clarifies the rules governing entry and irrevocability of instructions as well as finality of transactions (for both proprietary and customer transactions, which are treated the same way). EB only has a contractual relationship with the participant. For more details, please refer to Principle 19)
- the OPs clarifies the rules applicable to defaulted participants

Credit lines granted to participants by EB, acting as a settlement agent, are governed by a specific bilateral contractual documentation which is disclosed to participants benefiting from such credit lines and which cross-refers on some aspects to the T&C and OPs. This bilateral contractual documentation details the relevant aspects for participants in case of default:

- pursuant to the General Conditions Governing Extensions of Credit to Participants in the Euroclear System, each (cash) overdraft is payable immediately upon demand by EB
- the Collateral agreement governing Secured Borrowings by Participants in the Euroclear System (i) defines the “Events of Default“ under the provisions of the credit arrangements entered into between EB and a participant benefiting from a credit line granted by EB and (ii) sets out the remedies available to EB in case such “Events of Default“ occurs, which includes EB’s right to appropriate the collateral provided by the participant to secure its borrowings
- the Supplementary conditions governing extensions of credit to borrowers of securities through the Euroclear System (including GC Access service) defines additional “Events of
Default” applicable to borrowings of securities by a participant under the securities lending and borrowing services of EB

Prior to the declaration of an “Event of Default”, EB will send a ‘payment notice’ to the participant in writing. If no payment is received within a reasonable time-frame, EB will declare the default of the relevant participant by sending a default notice. EB can then enforce the collateral agreement and trigger APS to bridge any liquidity gap pending the collateral liquidation.

**Actions taken by EB following insolvency proceedings affecting a participant**

The OPs describes the actions taken by EB upon the opening of an insolvency proceedings against a participant. EB will always take four key actions:

- cutting of the insolvent participant’s communication means (i.e. preventing the entry into the system of new instructions)
- temporarily blocking the account(s) of the insolvent participant (mainly in order to prevent system generated instructions from settling when generated post-bankruptcy and facilitate the implementation of other actions
- handling pending instructions already entered into the system at the time of the opening of the insolvency proceedings following the finality rules documented in the T&C as per the provisions of the SFA
- contacting the administrator/liquidator of the defaulted participant

**Non defaulted participants**

For non-defaulting participants, no specific mechanisms need to be disclosed as EB’s actions will be limited to the exchange of information on the default affecting another participant in the Euroclear System.

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**Key consideration (KC) 4:** An FMI should involve its clients and other stakeholders in the testing and review of the FMI’s default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

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The Group Business Continuity & Assurance (GBCA) team organises regular, and at least annual, testing with all relevant internal stakeholders of its Business Continuity procedures.

For insolvency management, the internal policy framework of EB also foresees such testing with a relevant sample of external stakeholders including participants, market infrastructures (such as CCPs and other CSDs), trading venues and any other entities, as appropriate (such as central banks and EB in its capacity as settlement agent).
Principle 15: General business risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Key consideration 1: An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

Definition

General business risk, called Strategic & Business risk within EB, is one of the nine key risks included in EB’s risk library and enterprise risk management framework.

EB defines Business risk as short term risks (<2 years) to its financial results and solvency arising from, for instance:

- business decisions
- product and client portfolios
- human capital and other resources
- underfunded defined benefit pension obligations

EB defines Strategic risk as medium to long term risks (>2 years) to its existence and our ability to deliver our strategy, arising from, for instance:

- our strategy & business model
- strategic decisions
- implementation of strategy
- technology, IT infrastructure and software

Strategy is set by the EB Board in alignment with the overall strategy of the Euroclear Group, and driven by the EB Management Committee, supported by the Strategy and Product Management divisions. Those divisions are part of the parent company of EB (Euroclear SA) which provides the services pursuant to an intragroup outsourcing arrangement.

Risk Identification, measurement, monitoring and management

The responsibility to establish and operate an effective risk management system of business risk remains with EB Board and Management. Please refer to Principle 3 (Framework for the comprehensive management of risks) for further details on EB’s enterprise risk management framework and how it helps management to identify, measure, monitor and manage risks.
Risk identification, assessment and monitoring

The first Line of Defence\(^{38}\) (in their area of business) uses the ERM framework to identify, assess, monitor and manage risks that might impact the achievement of EB’s key objectives.

Strategy and Product Management, among others, are required to identify, assess, monitor, manage and report on the risks resulting from poor execution of the strategy.

Finance coordinates a yearly forecast exercise, on revenues and costs, receiving input from all key internal stakeholders and taking into account external market evolution and potential risks. Market intelligence, regulatory changes and external sources of market statistics are used to evaluate internal revenue outcome and projections (i.e. a combination of qualitative and quantitative elements are taken into consideration in the forecasting exercise, market benchmarks are considered together with qualitative elements like policy changes on the market, etc.). Forecasts of volumes and revenues are formally re-evaluated on a quarterly basis. Monthly analysis (for revenues and costs) is reviewed by the relevant divisions and EB senior management.

The identification and assessment process is enforced by strategic workshops at senior level and interactions with the Board.

There are several mechanisms whereby client needs are captured, evaluated, reviewed, notably via User Groups or relationship via the Commercial Division. The Commercial Division, via the Client Relationship Managers, holds regular meetings at senior level with the users to make sure EB products and services continue to fit their business needs.

All other support divisions (e.g. Legal division) contribute to the identification, assessment and monitoring of Strategic & Business risks using the ERM framework and tools.

EB has a number of means to facilitate the identification, assessment and monitoring of Strategic & Business risks. Key among them are the positive assurance report (PAR) and risk & control self-assessment (RCSA) processes which facilitate identification of key Strategic & Business risks (amongst others) that might undermine the achievement of business objectives, along with identification and assessment of relevant key controls.

Further information is provided on EB’s RCSA process under Principle 3 (Framework for the comprehensive management of risks) and on the PAR process under Principle 3, Principle 17 (Operational Risk) and Principle 21 (Efficiency & Effectiveness).

Risk management

EB is also deploying “Risk Champions” in Operations divisions to, among others, promote the early identification and monitoring of new risks or the evolution of existing risks.

\(^{38}\) The three lines of defence model operated by EB facilitates the effective operation of the ERM framework. Each line plays a distinct role providing the Management Committee and the Board with confidence that EB is likely to achieve its key goals through the effective management of risks. For details see Principle 3, KC 1, (« Effectiveness of the risk management policies, procedures and systems »)
At group level, transversal business lines Management Teams, acting as advisory bodies, have been established to ensure focus and ownership of the business plans for each of the products, including their strategy, (new) developments, sales, service delivery, and bottom-line P&L. Although they are not formal governance bodies as such, they facilitate the cross-divisional and entities coordination to ensure consistency and alignment with the overall group strategy.

Monitoring of the overall financial drivers risk is done by the Financial Division and actively followed-up by the Management Committee. The financial results are compared to the financial plan on a monthly basis.

For the revenue side, the Commercial division monitors business at risk and opportunities for new business on a monthly basis and Product Management drives the quarterly review of Market Outlook and quarterly assessment of business risks and threats over a 5-years horizon.

The Finance division monitors the cost side (yearly performance review of suppliers and monthly reviews on implementation sourcing strategies and savings).

In addition, the Finance Division performs a capital and cash flow projection and planning for the next 5 years. The input for this analysis is provided by Product Management for the revenue side and each operational division for the cost side.

The key controls around revenues/costs are described in the Financial Internal Control Accountability (“FICA”) control framework.39

The EB Management Committee and Board (and its Risk Committee) monitors and regularly discusses EB’s financial performance and capital adequacy.

Risk Management (RM) is responsible for facilitating and challenging the first line on the identification, assessment, monitoring and management of Strategic & Business risks. It does this through a combination of continuous risk monitoring and analysis combined with a rolling programme of independent risk assessments. Key RM concerns are highlighted to the Management Committee and the Board Risk Committee through the quarterly CRO / Corporate Risk Report.

Furthermore, the Internal Control System (ICS) report (fed by the by-yearly Assurance Map process) is prepared yearly to report to the Board on the effectiveness of the EB internal control system.40

**Strengthening of the ERM framework**

EB has strengthened its ERM framework. For Strategic & Business risk, relevant improvements include:

- EB’s Positive Assurance Reports (PARs) are revamped to include all risk types (current focus is Operational Risk). PAR is a Management process where the first line captures the key

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39 *FICA is a process aimed at evidencing execution of the control activity*

40 *See also Principle 17, KC 1*
risks and controls (irrespective of the fact that a service is outsourced or not) that allow the continued adequate and effective operation and monitoring of the internal control system.\(^{41}\)

- The Risk Appetite framework has been strengthened to better measure and manage our risk profile (across all risk categories) within the agreed risk limits (derived from the aggregate level of risk approved by the Board).

- The New Initiative, Product & Pricing Board Policy provides the key principles specific to the identification, monitoring, and management of risks associated with the introduction of new products and services. The New Initiative, Product & Pricing Handbook lays down how those principles are applied, as set by the EB Management Committee. The improved framework is currently being rolled out.

- The process under which EB detects regulatory changes is being enhanced.

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**Key consideration (KC) 2: An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.**

EB holds high quality assets to cover its general business risk, as described under KC 4.

EB assesses its capital requirement for business risk under three different approaches:

- A statistical approach, which models the uncertainty of the pre-tax operating profit by forecasting safekeeping income, settlement income and net interest income.

- A scenario based approach, which captures the business and strategic risk and result in a potential decrease in net profit, developed as part of the group-wide capital planning exercise.

- A CSDR-related minimum requirement, corresponding to three months of operating expenses\(^{42}\).

The business capital requirement is eventually determined by taking the highest of the three approaches (i.e. minimum CSDR requirement and any loss-making outcome under the above first two approaches).

The length of time required to achieve a recovery or orderly wind-down is estimated by EB in its recovery, restructuring and orderly wind-down plan. The plan assesses the time and associated operating costs of achieving a recovery or orderly wind-down against a set of parameters (speed and timing, financial aspects, preparation criteria, etc.).

\(^{41}\) See also Principle 17, Operational risk

\(^{42}\) Article 4 of Regulation (EU) 390/270.
EB’s recovery, restructuring and orderly wind-down plan includes a range of options – as summarised under Principle 3, KC 4. Each recovery option (including recapitalisation options; see KC 4) could feasibly be executed between 1 day and 1 month. The restructuring options considered in the plan – which comprises various cost reduction, downsizing or business/asset disposal options – carry varying execution timeframes, in some cases of up to one year.

EB’s plan considers three options for orderly wind-down: sale of EB; transfer of participant assets; and close-down of operations. Based on an analysis of the timeframes that would be required to execute each option in a period of stress, and considering preparatory measures taken to support such options, EB currently estimates that an orderly wind-down would be manageable within 6 months (see KC 3, below).

Key consideration (KC) 3: An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover client defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements

Recovery and orderly wind-down plan

EB has developed a recovery, restructuring and orderly wind-down (RRW) plan under the supervision of the EB Board of Directors (see more details under Principle 3, KC 4). This plan details a range of recovery, restructuring and wind-down options that could be taken in the event of a threat to EB’s financial viability. Among other things, the plan assesses the capacity of each option, the timeframe required to implement relevant actions, and any preparatory measures required.

The plan further contains a general overview of the corporate structure of the entity, including an overview of the intragroup interdependencies and critical functions, and a description of the external interdependencies. The plan identifies a set of relevant quantitative and qualitative indicators both coincident and leading in nature, that are monitored to detect a negative trend in EB’s financial health. Trigger points are specified to allow for timely escalation to decision makers in the event of a material deterioration in the financial situation of EB.

The RRW plan is updated on at least an annual basis, or in the event of a material change in EB’s business model or risk profile. Any updates to the plan are approved by EB’s Board, upon the recommendation of the Risk Committee. The Board approves the approach undertaken to prepare the recovery plan and the overall selection of relevant stress scenarios and tools (incl. recapitalisation), as well as the assessment of the suitability of the recovery, restructuring and orderly wind-down tools under the various scenarios. Overall, it is important that the Board is familiar with the plan and confident in its adequacy to deal with severe threats to viability, while ensuring continuity of critical service provision to the markets that EB serves. The Board also needs to understand its roles and responsibilities in the event that it is called upon to manage a crystallised threat.
To this end, a decision-making playbook has been developed to help both the Management Committee and the Board to take timely and effective decisions under the RRW plan in the event that a crisis situation was escalated. In such circumstances, the EB Management Committee would make recommendations for approval by EB’s Board. Where there were group-wide implications, the ESA Management Committee and the ESA Board would also be involved in developing and implementing required actions.

As noted under KC 2, EB has assessed that the timeframe required to execute an orderly wind-down under the recovery, restructuring and orderly wind-down plan would be no more than 6 months. Accordingly, in accordance with KC 3, to implement the wind-down options under the plan EB holds sufficient liquid net assets funded by equity to cover 6 months of operating expenses. Consistent with KC 3, the six months of current operating expenses are added on top of the Pillar 2 requirements\(^{43}\) to ensure that the capital assigned to fund an orderly wind-down is clearly conceptually separated from capital to cover other risks contemplated in sizing Pillar 2 requirements.

**Key consideration (KC) 4: Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.**

EB’s capital is invested in EUR-denominated sovereign, supranational, agency and other sub-sovereign or state guaranteed debt instruments, which are freely transferable and without any regulatory constraint or third party claims that could impair EB’s ability to access them on the same business day when a decision to liquidate such financial instruments is taken.

Financial instruments shall allow to obtain liquidity via an outright sale, by pledging the securities to the National Bank of Belgium (NBB) or, alternatively, to use them in the repo market. Pledging the securities to the NBB and/or use them in the repo market ensures EB same-day monetisation.

Temporary cash positions to bridge cash flow gaps are allowed (when the proceeds of a redemption are not immediately re-invested due to lack of investment opportunities). In accordance with internal policies\(^{44}\), they must however be ultimately re-invested with the NBB.

The quality and liquidity of the assets is assessed monthly by EB. In case of credit rating downgrades of some of the bonds held, the investment portfolio is adjusted to ensure that all bonds in the portfolio are rated AA+ or above.

\(^{43}\) As a credit institution, Euroclear Bank complies with the requirements formulated in the transposition of the Basel Accord into European regulation - the European Capital Requirements Regulation and the European Capital Requirements Directive

\(^{44}\) Financial Risk Policy Handbook
Key consideration (KC) 5: An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

The recovery plans for the Euroclear entities include options describing how capital could be sought from other group entities or from external shareholders. Please refer to KC 3 on more details on the recovery planning.

As a parent company, Euroclear SA/NV is well placed to inject capital in its subsidiaries in case of need. It is the group’s policy to maintain excess capital in Euroclear SA. Recapitalisation via the group’s excess capital can be decided on and implemented quickly.

EB may decide to raise new capital from existing or new shareholders if these measures are insufficient.
Principle 16: Custody and Investment risks

An FMI should safeguard its own and its clients’ assets and minimise the risk of loss on and delay in access to these assets. An FMI’s investments should be in instruments with minimal credit, market, and liquidity risks.

Key consideration (KC) 1: An FMI should hold its own and its clients’ assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

Euroclear Bank (EB) recognises custody risk as a key source of risk under the operational risk category (see Principle 3 for a description of the Enterprise Risk Management Framework) and as such, integrated in the Euroclear Risk Library.

Custody risk relates to both the risk of a loss of own (securities and cash) and participants’ assets (securities) held through various counterparts.

EB holds cash with cash correspondents in different currencies. Cash is not subject to asset protection. Participants have a claim against EB (currently rated AA by S&P and AA+ by Fitch).

Securities are held by the participant with EB. EB is either acting as issuer CSD (where securities are primarily issued with it) or as investor CSD (where EB holds the securities with another CSD, directly or indirectly). EB maintains both direct and indirect links with CSDs and intermediaries inside and outside of the European Union. When EB holds securities with another counterpart, it performs a verification of the local legislation to ensure that securities held with such counterpart are eligible in the Euroclear System for settlement by book-entry movements and benefit from a level of asset protection that has comparable effects to the Belgian regime (e.g. the securities held by EB cannot be claimed by the creditors of the counterpart, even in the context of insolvency of such counterpart). A review of the relevant aspects of local legislation is performed periodically. For more details, please refer to Principle 1.

For securities the participant holds in FundSettle, securities can be held through EB (EB holds the fund’s shares or units in the books of the issuer or the CSD (for funds distributed via a CSD) and the participant benefits from the asset protection regime offered under Belgian law). Alternatively, securities can be held by the participant directly in the books of the issuer (register generally held by a transfer agent) and EB only reflects the position of the participant via a non-deposit account.

45 While the EB T&C refer to the generic concept of « depositary », when referring to issuer CSD activity or investor CSD activity, EB uses a series of concepts which are regrouped here under the generic name of « counterparts ».

46 FundSettle is the dedicated fund service of Euroclear which supports both the buy and sell sides of fund distribution, providing automated order routing, settlement and asset servicing.
Procedural framework

EB Network Management is responsible for the set up and the maintenance of EB’s network of counterparts for the issuer CSD activity, the investor CSD activity, and their respective market environment. The principles of the set up and monitoring of such markets are described in the EB Network Management Policy Handbook which is updated and reviewed when applicable and is approved on a yearly basis by the Euroclear Bank Management Committee (EB MC).

Besides verifications on the legal framework, EB performs a risk based eligibility review on the counterpart before being accepted.

As a prerequisite, EB’s Compliance & Ethics (C&E) department is also involved and a counterpart cannot be considered unless C&E has provided a positive feedback on the compliance framework of such counterpart in respect of anti-money laundering and anti-terrorist financing regulations.

Once this is obtained, additional criteria are assessed, amongst others:

- creditworthiness
- regulatory status
- accounting practice
- safekeeping procedures
- control environment
- risk management principles

All these criteria are monitored on an ongoing basis to capture and assess any changing parameters and mitigate any new risk identified or existing risk which has deteriorated.

Please refer to Principle 20 for further details on the set up and maintenance of CSD links.

Protecting EB’s assets and participants’ securities

Asset protection is ensured through different measures.

For issuer and investor CSD activity

EB obtains an external legal opinion on a number of key local practices and regulations. These include asset protection, insolvency proceedings and asset accessibility as the case may be.

EB sets up contractual agreements with the relevant counterpart and ensures asset protection through specific provisions:

- the right to inspect and audit the records at any time
- confirmation of the absence of encumbrance on the assets (absence or waiver of lien except if mandatory under local law)
• understanding on when settlement is final
• clear description of insolvency proceedings under the laws of the counterpart
• Segregation of assets
• Strong record-keeping processes and accounting practices
• Daily reconciliation of balances and movements with the counterpart
• confirmation that adequate insurance coverage is in place

An annual due diligence review process is in place. EB also uses reports from the external auditor of the counterpart (such as ISAE 3402) for its annual assessment.

In case of physical securities, such securities are kept in the vaults of depositories which are selected and monitored for this additional purpose. For the issuer CSD activity, physical securities are global notes kept through common depositories and common safekeepers.

**For securities held in FundSettle**

EB obtains an external legal opinion on a number of key local practices and regulations. These include, asset protection, insolvency proceedings and asset accessibility

For funds units held through EB, an annual due diligence review process is in place to get a positive assurance on the Fund Management Company and Transfer Agent on a number of criteria. EB also uses reports from the external auditor of such entities (such as ISAE 3402) for its annual assessment

For funds units held in non-deposit accounts, EB ensures an adequate recording of the positions in the funds register

**Key consideration (KC) 2: An FMI should have prompt access to its assets and the assets provided by clients, when required.**

**EB’s investments of own assets**

For securities, EB has set up an appropriate structure for the purpose of holding its proprietary securities in the Euroclear System, which ensures adequate legal segregation in the books of EB. EB’s portfolio of own securities (investment book) currently consists of euro denominated sovereign, supranational or agency debt instruments. Since all those assets are held in the Eurozone, there are no time zone or legal jurisdiction problems that could delay access by EB to its assets. Please see Principle 11 (Central Securities Depositories), KC 5 for further details.

EB is a credit institution. Cash deposited with it is reimbursable upon request (participants have a claim against EB). For cash, when required EB can instruct (access) transfers on the cash accounts it holds through its network of cash correspondents.
Client deposits in cash can be invested on a secured basis through reverse repos or unsecured via outright purchases of high quality securities, deposits at the central bank or to limited extent deposits with EB cash correspondents or other market counterparts (treasury book).

EB ensures daily it has sufficient cash and/or monetiseable assets to support both day-to-day and potential stress scenarios. EB mainly invests long balances in assets that either contractually mature the next day, can be monetised same day through the NBB or committed repo facilities or liquidated same day via a liquidation manager.

**Participant’s securities**

Part of EB’s requirements for the establishment and maintenance of a link is asset accessibility, meaning that EB gets prompt access to the assets when required (in business as usual and contingency mode/insolvency situation).

In the normal course of business, EB ensures prompt access to securities through relevant account structure for each link allowing access to securities without undue delay and through STP communication channels allowing EB to settle transactions and get access to the relevant reporting promptly.

In case of insolvency situations of a counterpart, the external legal opinions collected by EB for each link and for funds held by EB stipulates the proceedings to claim securities from the receiver and avoid undue delays in accessing the securities. With regards to access to securities and communication channel, in case of direct operated links, EB has implemented a dual communication channel, allowing EB to communicate/instruct directly to the CSD if needed and these are tested on a yearly basis.

**Key consideration (KC) 3: An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.**

EB monitors its exposures on stakeholders for all the roles they may have in the system, such as participant (credit line for settlement activity, securities borrowing), issuer of securities (used as collateral by other participants, or securities that are being redeemed/pay interest), cash correspondent and treasury counterpart (for redeposits of cash balances), common depository, CSD and intermediary (for indirect links).

For more information regarding the measurement and monitoring of credit and liquidity exposure please refer to Principle 4 section KC 2 and Principle 7 section KC 1.

**Securities**

EB’s strategy is to convert, where possible, indirect links to direct links to minimise the risk on custodian banks. Currently, more than half of EB depot is held through direct links to the local CSD. For indirect CSD links, two depositories are appointed per country and securities are split amongst them, if considered appropriate.
Cash

The management of the credit risk on the cash correspondents is based on three pillars:

- a rigorous selection process of cash correspondents
- monitoring of long balances with all cash correspondents
- monitoring on a continuous basis of the exposures on cash correspondents versus risk thresholds (market risk limits, credit limits and large exposures/concentration limit)

Please refer to Principle 4 (Credit Risk) on Risk Management tools to control credit risk (KC 2).

For the majority of currencies, EB has accounts with multiple cash correspondents in order to avoid concentration of credit and liquidity risks.

Key consideration (KC) 4: An FMI’s investment strategy should be consistent with its overall risk management strategy and fully disclosed to its clients, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

General Investment Strategy

EB’s investment strategy is in line with CSDR requirements and is consistent with its overall objective, as an FMI, to keep a low risk profile, especially when considering the broad characteristics of the assets EB is exposed to.

The general principles of EB’s investment strategy are mentioned in its Annual Report and detailed more in-depth in its Pillar 3 disclosure.

Investment Guidelines

EB has defined different investment guidelines and restrictions for the reinvestment of its capital and proceeds from long-term funding (investment book) and of the client deposits (treasury book).

The objective of the investment book is capital and liquidity preservation. The criteria for assets in its investment book are:

- financial instruments are invested in EUR-denominated and ESCB-eligible sovereign, supranational, agency and other sub-sovereign or state guaranteed debt instruments, freely transferable and without any regulatory constraint or third party claims that could impair EB’s ability to access them on the same business day when a decision to liquidate them is taken
- the issue or issuer must be rated AA- or higher by at least two out of the three rating agencies (Moody’s, S&P and Fitch) and confirmed by the internal rating

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47 Eligibility criteria are defined by the European Central Bank and covered by the user standards in terms of eligible links
48 The lowest rating provided by each agency must be used, except if decided otherwise by EB CALCO.
• the remaining time-to-maturity of the investment book must not exceed five years and the investment book must not bear foreign-exchange risk
• temporary cash positions to bridge cash flow gaps are allowed. They must however be re-invested with the central bank
• strict concentration limits apply and are monitored (e.g. credit rating, issuer, custody, etc.). A maximum 35% of the investment book can be invested in one issuer and maximum 20% in AA-rated securities, in addition to the regulatory credit concentration limits

The objective of the treasury book is to manage the day-to-day cash flows and liquidity needs (intraday and end-of-day) resulting from EB’s activity.

Client deposits in cash can be invested on a secured basis through reverse repos or unsecured via outright purchases of high quality securities, deposits at the central bank or to limited extent deposits with EB cash correspondents or other market counterparts.

The criteria for the investment of client deposits of cash are:
• multiple currency-denominated sovereign (or assimilated as such), supranational or agency debt instruments with minimum AA-rating that EB can monetise same day via a Central Bank or a committed repo facility.
• financial instruments of the Treasury securities portfolio need to be eligible for the High Quality Liquid Asset buffer of the Basel III LCR ratio
• the securities can have a remaining time-to-maturity of maximum 6 months
• strict concentration limits (per issuer and rating category) apply and are monitored

The risk appetite with respect to investment of client cash deposits in the treasury book is calibrated via regulatory capital usage (operational limit implemented).

In addition, EB sets limits to manage credit exposures on individual participants or counterparties.

Daily reporting is generated to report any excesses vis-à-vis the investment guidelines and restrictions to the CALCO49 and EB Management Committee.

At least annually, the Credit Department assesses the creditworthiness of the treasury counterparts, countries and issuers of securities held in the investment book by assigning an internal credit rating to them. EB MC defines, per counterpart/credit rating, the limits (i.e. limits to market facilities) within which EB can undertake treasury transactions such as redeposits, reverse repos, FX swaps. No market facility can be granted to a counterpart without an appropriate assessment of the creditworthiness.

The treasury book can be invested in sovereign debt. Collateral received through reverse repo collateral must respect close-links.

49 CALCO is a sub-committee of the EB MC with some delegated authority and which provides assurance to the EB MC on liquidity, credit and market risks as well as capital matters in line with EB’s risk appetite (see Principle 2 for more details).
Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI’s obligations, including in the event of a wide-scale or major disruption.

Key consideration (KC) 1: An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.

Overview of the operational risk management framework

Euroclear defines Operational Risk as the risk of loss resulting from inadequate or failed internal processes, people and systems, or stemming from external events.

Euroclear Bank’s (EB) ERM Framework Policy Handbook lists the key types of operational risks considered. They are mainly based on the Basel Committee’s recommendations:

- Employment practices & workplace safety
- Clients & products
- Execution, delivery & process management
- Internal fraud
- External fraud & cyber
- Business disruption & systems failure
- Damage to or loss of physical assets

But also include:

- Custody risk
- Model risk

EB has enhanced the robustness of its Operational Risk Management Framework, following recent regulatory developments (CSDR\(^50\)). This includes the revision of the Group Operational Risk Board Policy (ORBP), which defines the key principles for operational risk and is developed and maintained in accordance with market practices and regulatory guidelines for risk management.

\(^{50}\) Regulation 909/2014 of 23 July 2014 on improving securities settlement in the European Unions and on CSD.
The primary goal of this policy is to define the operational risk management framework that ensures that Euroclear takes the necessary steps to effectively identify, assess, monitor and manage operational risk at all levels. The Operational Risk Management Framework also describes the roles and responsibilities for managing these risks, all relevant risk processes and the information needed to make sound management decisions.

The principles set in the Operational Risk Board Policy are then detailed in the Operational Risk Management Policy Handbook and in other board-approved policies for specific types of operational risks.

The Operational Risk Policy Handbook details how Euroclear identifies, measures, monitors, reports on and mitigates its operational risk. It also oversees what is considered as “operational risk”, the sources to which they are related, and the different categories where they belong.

Other policy documents related to operational risk management were further improved. This is the case notably for:

- EB’s Information Technology Framework Board Policy which defines the principles sustaining the Bank’s IT effectiveness and defines thus the standards which operational risk management tools (including monitoring tools) have to comply with
- the Critical Service Providers Board Policy Handbook
- the Change, Project and Programme Management Policy Handbook
- the Fraud Prevention framework is being uplifted

The EB MC translates the Board policies goals into policy handbooks that are further expanded by the first line of defence into practical Implementing and operating procedures.

Identification

Risk Identification is described under Principle 3, KC 1.

Specifically for Operational Risk, the process for the identification of risks is described in the “EB Operational Risk Management Policy Handbook”.

Risk Management provides a number of standard identification tools and techniques that the business (first line) uses to identify risks, including:

- monitoring performance and risk indicators in the business (e.g. settlement volumes, settlement failures, service availability, number of operational incidents, etc.)
- performing systematic risk assessments of new products or services
- identification of single points of failures (SPOFs). A SPOF is defined as part of a system - people, processes, technology, including critical utilities and critical service providers, with no alternative or redundancy in place that, if it fails, would result in a critical operation or services being stopped
- recording of incidents, caused, for instance, by inadequate or failed processes, people and systems, or by external factors
Management and monitoring

Once risks have been prioritised, the first line assesses how best to respond to and control the identified risk. This is done through selecting and implementing an appropriate risk response strategy (or strategies) and through introducing appropriate controls. The residual risks, resulting from the implementation of mitigating actions and controls, are then reported to and presented for acceptance to the relevant bodies as per the applicable governance.

The first line takes full responsibility for monitoring – via, for instance, the use of KRI’s (e.g. system uptime) and reporting its risks – via for instance the PAR - Positive Assurance Reporting process, which enables first line management to provide the EB MC and Board with direct assurance on the effectiveness of Euroclear Bank’s risk management and internal control arrangements.

Controls are essential for risk mitigation, and specific key responsibilities are linked to the control framework. The effectiveness of EB’s internal controls systems is self-assessed by the first line, supported by their review and tests and then further assessed by the second and third lines of defence:

- Risk Management supports the board in defining the framework and provides an independent assessments which may confirm, nuance or disagree with first line management’s views
- Compliance: monitors, tests and reports to management on controls relating to compliance with laws and regulations and advises on remedial actions
- Internal Audit independently reviews and tests the controls. It also reports to management about the adequacy and effectiveness of the control environment

EB’s key controls are identified, monitored and regularly assessed in the PAR. Any defects identified (e.g. incidents, control failures, external events) result in an adjustment of the control system and is recorded in the PAR. The PAR demonstrates that controls are adequate and effective or not. A summarised view, the Assurance Map and the most important control weaknesses and the related action plans are pulled together for the annual review of the Internal Control System in the “ICS report”.

Operational Incident Management is managed through the Euroclear Service Desk (ESD) and the Problem Management Record (PMR) database for IT incidents and through the Report of Irregularity (ROI+) database for non-IT incidents. The ROI+ database is the dedicated incident repository for logging all non-IT operational incidents across Euroclear Bank. The tool, supports a standardised workflow for the different steps of the process covered by the ‘Incident Escalation and Loss Data Collection Procedure’.

Risk Issue Tracking is performed through the I-Track database. The I-Track database is Euroclear Bank’s dedicated risk and issue tracking tool, which allows for effective assessment and follow-up of risks, control gaps and weaknesses that have been identified by the 1st, 2nd or 3rd line of defence. Euroclear Bank promotes the pro-active identification and logging of risk issues. As such the I-track database is accessible to all employees. Each issue is populated with detailed action plans that set out the specific steps needed to be taken in order to mitigate the risks faced.
The effectiveness of EB’s IT Tools (and thus of Operational Risk Management tools), controls and procedures at mitigating the impact of operational risks is also assessed and evidenced in EB’s annual ISAE 3402 report.

**Fraud related policies, processes and controls**

Regarding fraud prevention, Euroclear has implemented a Code of conduct, an Ethical Conduct policy for accepting gifts and a whistle blowing programme.

All staffs have been informed on how to report any evidence or suspicion of fraudulent activities. All staff must on a regular basis follow awareness sessions and complete a compliance test including questions related to fraud prevention.

EB has also implemented specific fraud risk related controls (e.g. physical segregation and security on high risk areas and access badge, controls centred on Information Security -like password protection, segregation of duties, access management, clean desk policy, endpoint security51) (see also KC 5).

**HR related policies, processes and controls**

Euroclear Bank has several procedures currently in place to employ, train and retain qualified personnel, as well as mitigate the effects of personnel turnover or overreliance on key personnel. For each location Euroclear Bank recruits candidates that match the qualifications, skills, experience and expertise relevant for the vacant position. For each type of profile an adequate sourcing strategy is developed. A series of competency-based interviews, both by business persons and Human Resources division, ensure a rigorous selection process.

All applicants for employment are subject to pre-employment screening prior to employment by the Euroclear. The level or type of screening varies, depending on applicable laws and the degree of access that the successful applicant will have to sensitive information. Personnel security measures reduce the risks of theft, fraud or misuse of facilities by ensuring that potential employees are suitable for their prospective roles.

**Projects, programmes and change management**

As part of its operational risk management framework, Euroclear Bank has defined guidelines - outlined in EB’s Project, Program and Change Policy Handbook - for project, programme and change management. These guidelines aim to mitigate the risks arising from modifications to operations, policies, procedures and controls, enabling a successful business change. These projects, programmes and changes can be IT and non-IT related.

Euroclear Bank takes into account market practices and recognised industry standards such as PRINCE2, MSP and Prosci. To enable further maturity increase, this policy handbook is

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51 The security around devices (PC’s, iPads, ...) accessing the network of Euroclear
complemented with additional procedures, providing more details on the different steps of these methodologies.

Urgent production fixes in the SSS are managed through the incident management process. Incident tickets are issued and managed by Production Monitoring and Control and IT Major Incident Managers.

Urgent changes to the systems lately identified in context of program and project are managed by Air Traffic Control (ATC) which relies on standard risk assessment practices to authorise or reject such requests.

Changes to operational applications and their supporting systems and networks are planned, developed and implemented in a controlled manner as defined in EB’s Project, Program and Change Policy Handbook. The system development methodology takes into account the resilience of the infrastructure and applications which need to be respected for all critical infrastructure components and applications.

Quality assurance teams evaluate compliance to these principles and guidelines for every project or change as part of the production acceptance criteria.

IT teams test changes within specific environments, depending on the nature of the changes and in line with our software development life cycle (SDLC): in development domain (unit test), functional test domain (integration and system validation), permanent test infrastructure (PIE) domain (non-functional requirements) and pre-production environment (acceptance) to validate changes and ensure non-regression before launching in production.

IT prepares, reviews and signs-off Launch scenarios for any planned change. A roll-back strategy and associated actions must be defined and included in the launch scenarios.

Key consideration (KC) 2: An FMI’s board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI’s operational risk management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

Roles, responsibilities and framework

The governance structure of EB is documented under Principle 2.

EB is a Central Securities Depository (with a limited purpose banking license) and operates a securities settlement system. Most of its services rely on automation and use IT systems and applications.

The primary responsibilities of the Board are to define and oversee the implementation of the strategy and objectives of the Company, its risk framework (including risk appetite and policies) and to supervise the Company's management. This encompasses the framework for identification, management and monitoring of Operational Risk for which the EB Board has established a
dedicated policy, further implemented by the EB MC in other policy documents. For more details on the risk management framework, please refer to Principle 3.

The business objectives of EB, as endorsed by its Board, encompass systems safety, efficiency and reliability.

The EB MC is accountable to the EB Board for the management of operational risk and has set up a specific committee, the Euroclear Bank Risk, Local Security and Operating Committee (ROC), to ensure day to day follow up, composed of representatives of all functions (business, support and control). The ROC has mainly an advisory role and limited decision-making powers for risk acceptance (limited materiality).

The ROC has the delegated authority from the EB MC to:

- review the risks introduced by new services or products, validate mitigating actions and accept or reject the residual risk (up to medium risks). The EB MC reviews high and critical risks. Residual risks rated as critical must be mitigated and cannot be accepted unless approved by the Board
- monitor the evolution of the risk profile and control environment, including e.g. the risk review of operational issues, financial exposures, or business continuity matters
- monitor the service level management of outsourced services
- monitor continuity matters as well as local security matters (e.g. health and safety, personnel security)

Finally, the three lines of defence model designed by the Board and managed by the MC facilitates the effective operation of Euroclear Bank’s operational risk. Each line plays a distinct role in the effective management of risks:

- the first line is the owner of the risk and takes all necessary actions to manage them
- in the second line,
  - Risk Management provides a robust and independent oversight of management’s risk-taking activities
  - the Compliance & Ethics department (C&E) is the control function accountable for ensuring there is adequate monitoring of compliance with legal and regulatory requirements
- the third line (Internal Audit) provides the ultimate level of independent assurance to the MC and Board on the adequacy and effectiveness of governance, risk management and internal controls.

More information regarding EB’s three lines of defence model and Risk Management Framework is provided in Principle 3.

**Review and testing**

There are various mechanisms in place to ensure regular review and testing of risk policies and procedures, and control systems at large.
First of all, policies, handbooks and implementing procedures are reviewed as per the frequency indicated in the Policy Frameworks and Handbooks, or as needed (due for instance to changes triggered by regulation, market practices or business evolution) and report any review findings to line management up to the EB MC as the case may be and recommend amendments or additions to the EB MC or Board for approval as appropriate.

Updated policies and procedures are reviewed by adequate governance, followed by roll-out and implementation.

Regular business control and monitoring processes are in place, supporting the adequate and effective risk and control environment, in line with policies. Their outcome is reported and discussed in management performance meetings at different levels in the organisation (from first line shopfloor meetings and processes monitoring to reviews by the ROC and EB MC).

First line testing covers a broad range of topics (for instance business continuity as part of the BCPs tests- see KC 652, IT testing – see KC 153, and KC 4, etc.).

Testing of control design and effectiveness is performed by first line control units applying a risk based approach to derive the nature and frequency of control testing. The results are integrated into the PAR and reported to Management.

Moreover, the annual Internal Control System (ICS) review (combined with EB’s “I-track” review: a systems to track the actual and timely deployment of identified remediation actions) will aim to ensure a quality review for operational procedures.

Furthermore, the risk management framework, including the operational risk management framework, is subject to both internal and external audits, by the company’s external auditor. The Internal Audit division provides independent assurance on the adequacy and effectiveness of EB’s system of internal controls. Control testing is performed by Internal Audit as part of their annual audit plan and by external auditors, both as part of the ISAE 340254 review and in the context of the semi-annual review of the Financial statement.

| Key consideration (KC) 3: An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives. |

Operational reliability objectives

The EB Risk Appetite, as approved by EB Board, includes objectives for Business disruption and system failure, whereby EB actively seeks out weakness in its IT system and conducts tests to understand vulnerabilities. EB addresses those vulnerabilities aiming at system recovery time in less than 2 hours. EB has sufficient internal knowledge and capacity to ensure an adequate

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52 Review and Testing
53 In the section Project, Programmes and change management
54 Euroclear Bank yearly publishes an ISAE3402 Report, thereby providing to its participants substantive information on controls and operating procedures.
monitoring of the services provided to its clients received from its service providers. This objective is then supported by risk metrics, which are regularly updated to meet its goals.

Euroclear SA supports EB on the corporate technology side under an outsourcing arrangement. The performance of Euroclear SA is assessed and monitored on a regular basis through the use of qualitative and quantitative Key Performance Indicators.

Qualitative objectives are stated in the Operational Risk Management Policy Handbook and in implementing procedures and published on the intranet for employees. Further quality statements can be found in the sets of control objectives used and within the departments’ own internal process and standards documentation.

EB is maintaining appropriate IT tools, ensuring high standards of operational reliability and security, adequate capacity and integrity and confidentiality of the information. This is defined in EB’s Information Technology Framework Board Policy (being referenced in the Operational Risk Policy Handbook to better connect operational reliability requirements with the business objectives as defined by EB’s MC).

Key consideration (KC) 4: An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

Capacity Management

Euroclear operates a capacity management process, resulting in a capacity plan and a capacity risk matrix for critical IT services.

Capacity management is in place to ensure that IT capacity meets current and future business requirements. There is a continuous monitoring of defined infrastructure services (daily review and dashboards) to identify potential issues ahead of time. Actions are taken to increase capacity (or re-balance workload) as thresholds are approaching.

Performance testing is done in the project phase and based on project needs to ensure an IT application is meeting some of the non functional requirements (volume, response time, throughput, ...) before being launched in production. This testing is also used to rightly size the infrastructure and foresee the required capacity. Once launched, a post launch analysis is made to confirm or adapt the sizing.

A Capacity Plan Dashboard is produced on a monthly basis to the attention of the Euroclear Bank Risk, Local Security and Operating Committee (ROC), and a capacity risk matrix for critical IT services is provided twice a year to the EB ROC.

Capacity monitoring and management are part of the applied ITIL 55 framework and are included in the risk-based internal audit universe.

55 « Information Technology Infrastructure Library », an international standard for IT service management
The capacity management process includes regular check during which the Euroclear owned IT resource usage is looked at and escalated in case of possible abnormal evolution. These checks are most of the time run on a daily basis. Monthly capacity follow up is also performed.

**Capacity management within project lifecycle**

Capacity management is in place within the project lifecycle to define capacity needs for new infrastructures and support performance testing within projects. In the case of the introduction of new technology, capacity requirements are defined in the project as part of the Project Life Cycle methodology. The Project Life Cycle methodology, developed and adopted by the IT division, is designed to ensure that both functional and non-functional requirements of EB (including resilience, stress testing, capacity, expected service-levels...) are taken into account in the design and implementation of IT systems, and that the necessary testing is performed in accordance with the project’s test and launch strategy. At the launch of a new technology, a test summary report is produced.

| Key consideration (KC) 5: An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats. |

**Physical security**

Depending on the criticality of the information/data to be protected, requirements for physical security are defined in the Information Security Management System (ISMS) Policy Handbook and further documented in the Physical Security implementing procedure.

Under such policy Euroclear Bank ensures the implementation of physical security measures to prevent unauthorized physical access, loss, damage, theft, interference to EB’s information assets and processing facilities and interruption of EB’s operations. The facilities where critical information is stored or processed are constructed and arranged in a way that information is protected from physical and environmental threats. Access points such as delivery and loading areas and other points where unauthorized persons could enter the premises are controlled and isolated from information processing facilities.

The physical security takes into account applicable legislation, general best practices, both as defined by the parent group and as recommended by international standards like ISO 27000.

**Information security**

Consistent with the Basel Committee’s recommendations, information security risk is a component of operational risk. Information security is defined within Euroclear group-wide Operational Risk Board Policy as the protection of critical assets, by preserving their:

- confidentiality: ensuring that information is accessible only to those authorised to have access and is not misused
- integrity: safeguarding the accuracy and completeness of information

Key consideration (KC) 5: An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.
• availability: ensuring that authorised users have access to information when they need it
• compliance: ensuring that relevant legal and regulatory requirements in relation to the protection of information are adhered to

Under the group policy mentioned above, an Information Security Management System (ISMS) has also been implemented. The ISMS describes the high-level scope of EB’s control framework as well as roles & responsibilities. The domains such as access management or vulnerability detection and remediation are provided in supporting documents (policy handbooks and implementing procedures).

EB ensures that its ISMS is holistic and addresses threats to confidentiality, integrity and availability in line with its low risk appetite for operational risks.

Key controls are described in the ISMS Policy Handbook covering the different domains of information security in line with ISO 27001, such as Human Resources security, Information Asset security, Access control, Cryptography, Operations security, etc.

The supporting documents (Handbooks and Procedures) have been drafted in alignment with the ISO 27002 controls.

The ISMS Policy Handbook contains a specific section related to Cyber security.

Euroclear aims to achieve a level of cyber resilience commensurate to its role as critical financial market infrastructure.

Euroclear monitors and manages the cyber threat landscape, regularly reviews and actively mitigates cyber risks.

EB’s ISMS Policy Handbook sets the principles on how EB maintains the required level of information security and how EB safeguards its information assets, the interest of its key stakeholders as well as its reputation and brand. This policy handbook is based on market best practices and recognised industry standards such as ISO27001:2013, COBIT and ITIL. It is designed to address information security’s legal requirements for financial market infrastructures.

Euroclear Bank control and policy framework is aligned with ISO 27001:2013 (main reference). In addition, Euroclear Bank uses other frameworks where they bring value in terms of control definition, implementation or measurement. For example, CIS controls for technical implementation on platforms or CCM controls for Cloud deployments. All these references are mapped with the ISO to obtain global and homogenous assurance.

The ISMS Policy Handbook applies to all EB employees, contractors and third parties including any materials/facilities needed in supporting EB’s business operations.

Together with EB management, the Chief Information Security Officer (CISO) oversees and coordinates information security efforts across EB and supports the development of information security policies that are consistent with business objectives, risk appetite and the Enterprise Risk Management framework. The Management Committee retains responsibility for monitoring and
overseeing policies, issues and exceptions that are relevant to EB and reports any relevant issues to the Business Resilience and Information Security team.

Key consideration (KC) 6: An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.

Please refer to Principle 13 (“Participant-default rules and procedures” for further elaboration on the cases of participants default which is a specific type of possible incident that could cause disruption).

Objectives of Business Continuity Management framework

The Business Continuity Management framework comprises 3 main documents:

- EB Business Continuity Strategy Board Policy: This Policy includes a description of the IT infrastructure and disaster recovery strategies of EB IT systems provided by Euroclear SA. These strategies support the resumption of critical services with the set Recovery Time Objective (“RTO”) of 2 hours and the completion of the settlement day on the scheduled date. It also describes the ESA data centre infrastructure, with a second and a third data centre, providing an additional level of resilience.

- EB Business Continuity Management Policy Handbook: This Policy Handbook details the requirement for IT and offices resilience which are implemented at EB. It also details the incident escalation and crisis management processes (reviewed and enhanced in 2017 along new CSDR requirements).

- EB Business Continuity and Disaster Recovery Plan (These documents are complemented by departmental BIAs\(^{56}\) and specific response plans)

In accordance with legal requirements, EB’s Business Continuity Management (BCM) framework describes roles and responsibilities, and the adopted approach. It also includes objectives supporting the business targets for the timely resumption of critical operations.

The EB MC approves the business continuity objectives and plans.

The scenarios of a possible long IT outage and related response plans are continuously enhanced and tested.

BCM standards are outlined in the EB Business Continuity Strategy Board Policy including:

- key definitions and principles related to Business Continuity Management

\(^{56}\) Business Impact Analysis
- critical business functions and key operational activities
- recovery strategy: outlines the recovery strategy to ensure the timely recovery of operations and the fulfilment of EB’s obligations in case of disruptions

**Business Continuity and Disaster Recovery Plan**

The first line is responsible for the coordination of the Business Continuity and Disaster Recovery Plan (BCP) across the group. Every component of the BCP is tested once a year along the requirements set in the policy. The BCP is designed to foresee that IT systems can resume operations within two hours and includes all reasonable steps to ensure that settlement is completed by the end of the business day even in case of a disruption.

The role of Risk Management is to review, challenge and identify gaps in the Business Continuity Risk Assessments (BCRA) performed by the first line and challenge the adequacy of the documentation (BCRA, BIA, BCP and DRP), their completeness, proposed risk responses and the overall consistency.

**Business Impact Analysis**

The Business Impact Analysis (BIA) is the foundation of Euroclear’s BCM process.

A formal BIA is used to identify the critical activities and their recovery time objectives for each of the business processes. During the BIA, threats and risks associated with business process' interruptions are identified and assessed by determining the effect of loss, interruption or disruption to business on the function of each department and thus on the organisation as a whole. The analysis considers both the short and long-term effects of an incident, and identifies dependencies on people, information, technology and facilities. The output of the BIA is used to form the Business Continuity strategy and plans, in accordance with the Operational Risk Board Policy.

**Business Continuity Plans**

Business continuity plans have been developed to cover a number of defined scenarios, including the loss of an office, loss of staff and an IT disaster recovery incident. They contain the following elements:
- guidelines on how to use the plan
- the process to alert and activate the crisis management team
- responses and recovery procedures meant to return the business to normal operations following an incident or disaster
- procedures to continue to maintain critical activities following a widespread loss of staff
- communication guidance and contact list with supervisors, employees, key clients, critical suppliers, shareholders, management and other stakeholders
- critical contact information on continuity teams, affected staff, clients, suppliers, public authorities and media

The Corporate Business Continuity and Disaster Recovery Plan is the overarching document designed to help the organisation respond to incidents. It sets operational priorities and includes checklists and supporting information for different scenarios.

The departmental plans provide sufficient information for team members to respond to an incident. The actual content of each departmental plan varies depending on the criticality of activities.

In addition to their departmental response plans, following departments develop specific response plans:

- HR to cover all people aspects, including social unrest
- Facilities to cover response to building evacuation/invacuation and access control issues (e.g. demonstrations)
- Corporate Technology to provide an IT recovery plan regarding IT disasters including cyber related incidents; Corporate Technology plans also include procedures to achieve data / transactions consistency
- Corporate Communication that details how Euroclear will communicate with internal and external audiences during a crisis
- Business operations to provide a response to different financial crisis scenarios

Data centres

Euroclear has three data centres:

- two data centres (DC1 and DC2) provide real-time synchronised data mirroring and act as the primary and secondary data centre. The distance between these two data centres is sufficient to prevent that the secondary site is affected by an event affecting the primary site. Euroclear Bank’s critical services are supported by resilient/adequate:
  - IT platforms (hardware and software)
  - networks configurations
  - communication means
  - capacity to process all transactions before the end of the day even in circumstances where a major disruption occurs
- a third data centre (DC3) receives asynchronously replicated data. It allows recovery of critical services in a few hours in the event of a regional disaster affecting both other data centres (like a coordinated attack or a major earthquake).

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57 Reconciliation procedures exist to deal with the limited data loss that may occur in extreme circumstances (simultaneous failure of DC1 and DC2, rolling disaster).
System resilience

The system development methodology adopted by the IT division includes principles and guidelines with regard to resilience of the infrastructure and applications which need to be respected for all critical infrastructure components and applications. Compliance with these principles and guidelines is evaluated for every project or change as part of the production acceptance criteria. The core processing systems and networks are designed to provide resilience through the use of mechanisms including mirroring (synchronous) of production data, the use of fault tolerant computers or resolving single points of failure. The provision of the communication lines is split across a number of telecommunications suppliers thereby providing additional protection against a single point of failure.

Implementing procedures

The objectives of the Business Continuity Management (BCM) implementing procedure which are firmly embedded into Euroclear’s business culture, are to:
- outline the BCM system in which Euroclear operates
- ensure that:
  - Euroclear is prepared to respond to impacts resulting from a disruption to service
  - all Employees understand their roles and responsibilities when responding to disruptions and have a clear understanding of the course of actions to be followed to respond to such disruptions

Procedures and checklists are maintained and made available in various ways to enable that all involved staff (including members of the EB MC or of the Board as the case may be) can perform effective management and control of the services at all times, also in case of emergency.

Standard introductory training for new Euroclear staff explicitly covers business continuity in general and personal responsibilities. BCP awareness updates, exercises and training are provided at a minimum on an annual basis to all Euroclear group staff, using different communication channels and tools.

Synchronous mirror production

The core processing systems synchronously mirror production data between DC1 and DC2. Hence, the status of all transactions is known even in case of a disruption affecting one data centre.

The core processing systems also asynchronously mirror production data between the active data centre and a third data centre. In the extreme case that both DC1 and DC2 would fail, a data loss of less than one minute (dependent on system volumes at time of failure and excluding rolling disaster) could occur.

Data Loss Response plans have been developed by operations specialists to minimise the impact of data loss whilst aiming to resume computerised operations in a time period which does not
cause unnecessary strain on market stability. Depending on the circumstances, EB could decide to resume operations while some reconciliation activities are still being run in parallel (see EB’s Terms & Conditions for more details).

The Data Loss recovery principles are:

- records of transactions held by National Central Banks (NCBs), Central Securities Depositories (CSDs) occurring during the suspected period of data loss will be considered by Euroclear to be the ‘master’ source
- at all times Euroclear is the ‘master’ source for clients. This may result in previously executed transactions requiring re-execution by clients following resumption of operations
- clients will be informed of their obligation to evaluate the status of trades throughout and following recovery

Crisis management

In order to ensure a systematic and coordinated response to unexpected events, Euroclear established a three-tiered Bronze-Silver-Gold crisis management structure. These three levels deal with operational - tactical - strategic issues respectively.

Communication to internal and external parties during and after an incident forms an essential part of the incident response. The Crisis Management teams are required to assess the need for communication and if so, to communicate to clients, clients facing staff, other staff, and, from Silver on, also to supervisory authorities and in case of Gold to the press.

Client communication is to be initiated as soon as possible, with a threshold set at 30 minutes after the calling of the Bronze meeting. The Commercial Crisis Management guide also gives guidelines on the message contents.

Secondary site

Euroclear has implemented a ‘dual office’ and/or back up site strategy for staff, with geographically-dispersed business operation sites to limit the risk that a single event will impact a main site and its back up. Business resumption is tested on a regular basis to make sure that in case one site is unavailable, all critical activities can be operated from another site.

Review and testing

The Business Continuity Policy is reviewed annually and considers changes to Euroclear’s risk profile, business objectives, operational environment, legal and regulatory requirements and market expectations.

The main BCP scenarios tested include all scenarios listed in CSDR such as loss of office, staff, infrastructure, critical provider and financial crisis impacting the market. The different root causes that may lead to such impacts are identified in EB’s Business Continuity Strategy Board Policy.
A formal BCP test framework is maintained indicating how and when each element of the plan is tested. The test framework helps ensure that all elements of the plan are tested periodically.

The risk management function has the overall role of coordinating and promoting BCP testing and reviews. RM also consolidates management reporting of the testing and its outcome to management, Audit and Risk Committee and to the group. These tests include:

- IT disaster recovery testing: Production is transferred from data centre one to data centre two at least six times per year and once per year to data centre three
- office switch tests, simulating the loss of a single office is organised at least twice/year for each department running any critical function
- several crisis management exercises (alerting tests or simulation exercises) are organised each year
- testing of agreed arrangements with external parties (clients, business partners, critical providers, other FMIs...)
- involvement in market-wide exercises where and when they are organised

The BCP solution and recovery plan including the switch of processing between sites is designed not to be impacting clients. This means that clients will not know from which of the IT centres the services are provided, or if there was a switch of the processing site. There is not any particular action for a client to take during a BCP test.

**Key consideration (KC) 7:** An FMI should identify, monitor, and manage the risks that key clients, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.

**Risks to the FMI’s own operations**

Euroclear Bank defines Operational Risk as the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events.

Euroclear Bank continuously seeks to identify and manage risks posed to its business and the effective delivery of its services. Euroclear Bank also endeavours to limit its own contribution to systemic risk and ensure it remains within its risk tolerance.

The Operational Risk Board Policy sets out key operational risk management principles, while an Operational Risk Management Policy Handbook defines specific methods for the identification, measurement, monitoring and reporting of operational risks, in line with the general framework.

Euroclear Bank has also developed tools and techniques for the handling of specific risks, e.g. single points of failures, incidents, manual intervention, etc.

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58 See Principle 17, KC 1
The operational risk framework is further elaborated in dedicated frameworks, including:

- business continuity management
- client admission & on-going monitoring
- information security management
- Information Technology
- services by Third Parties (covering Outsourcing/Critical Service Providers and Links, Market infrastructure and Agents\textsuperscript{59})

Key Participants and key agents (network management) are covered by the BCP arrangements.

Furthermore, Euroclear Bank has uplifted its approach to systemic risk, both from the perspective of its own resilience to systemic risk (i.e. a systemic risk crystallising in the market and hitting Euroclear Bank) and its potential contribution to systemic risk (i.e. a systemic risk coming from Euroclear Bank and impacting the market.

**Critical Service Providers (CSP)**

Euroclear may outsource certain services and activities to third party providers, wherever those providers are, inside or outside of the Euroclear group.

Euroclear has designed a robust outsourcing framework, which consists of a defined life cycle which relies on a strong governance, an internal control system and Euroclear best practices around the management of risks, including conflicts of interests.

Service delivery is reviewed on a regular basis. Services are measured and compared with targets to identify whether the objectives are met, and where applicable, what actions need to be taken to improve the service.

**IT Services**

The IT services have been outsourced to a service provider: Euroclear SA/NV which is the parent company of EB. The relationship with the provider is defined in a formal agreement including service level agreements. Service delivery is reviewed on a regular basis through qualitative and quantitative Key Performance Indicators (KPI). Corrective actions are requested when the agreed KPI's are not met.

\textsuperscript{59} The Euroclear Bank Network Management Policy Handbook defines the criteria for the set-up and evolution of a CSD link or counterpart.
Users and links

EB has defined access criteria to avoid that a participant could be disruptive for the system (see Principle 18 [“Access and participation requirements”] for more information).

EB furthermore continuously invests to encourage participants to manage and contain the risks they pose to Euroclear, by keeping them informed - through user documentation, extensive operational reporting and training, relationship (via user committee or client facing relationship) and by applying other types of measures (i.e. charges to deter riskier behaviour, sponsorship process at admission) – as detailed in Principle 18 (“Access and participation requirements”) and Principle 3 (“Framework for the comprehensive management of risks”) KC 2.

In the framework of its links reviews, Euroclear Bank reviews operational risks aspects, including the business continuity plans of all counterparts involved in the CSD link. See earlier in the text, under Business Continuity considerations and Principle 20 for more details.

Risks posed to other FMIs

The risks that EB bears from or poses to other FMIs are identified and assessed under the principles set out in the ERM Framework Policy Handbook and in the Systemic Risk Policy Handbook. To operate a comprehensive risk management framework built on established standards and market practices, Euroclear Bank has enhanced its framework for Systemic Risk Management, which will allow EB to better identify, monitor and manage those risks. This includes the use of interdependency maps and horizon scanning and the outcome from the Systemic Risk sub-group (lead by Euroclear), working under the auspices of the FMI Forum. The enhancements to the systemic risk framework are mentioned also in Principle 3 KC 3.

With regard to financial and operational risks posed in the context of the Bridge link with Clearstream Bank Luxembourg (CBL), the main risks that EB can pose to CBL (and vice-versa) are:

- a scenario where one of the CSDs is not operational and cannot process settlement transaction files from the other. To mitigate this risk, EB has together with CBL developed common operating contingency procedures. In addition, the business continuity consequences of a scenario where one of the CSDs is not operational at all have been analysed and dedicated joint contingency scenarios have been developed accordingly
- Credit risks as elaborated in Principle 4
- Liquidity risks as elaborated in Principle 7

Principle 20 (“FMI links”) further elaborates on the risks posed to or by other FMI’s.
Principle 18: Access and Participation requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access

Key consideration (KC) 1: An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect clients and other FMIs, based on reasonable risk-related participation requirements.

Euroclear's access rules allow fair and open access to applicants for participation in the Euroclear system. Indeed the rules apply evenly to all persons on the basis of objective and non-discriminatory criteria. Also, access rules are published and generally accessible, and prospective applicants are kept informed in a timely manner of any eventual changes. Euroclear is of the view that its access rules are therefore clear and effective for the benefit of all prospective participants.

Fair and open access

Euroclear Bank (EB) operates a securities settlement system governed by the laws of Belgium. Access to the system is subject to legal requirements outlined in the law of 28 April 1999 implementing Directive 98/26/EC (also referred to as Settlement Finality Directive) and hereafter referred to as the “SFAct”.

Euroclear operates an open and transparent access and participation process, with publicly disclosed, non-discriminatory participation requirements.

All participants in EB are direct participants.

Governance of the Admission Process

The admission process is documented in the Operating Procedures of the Euroclear System that form part of the Terms and Conditions governing the use of Euroclear and the Internal Operating Procedure - EB Admission Process. Euroclear Bank’s Management Committee (EB MC) has the final decision on granting or refusing access to any applicant, based on a recommendation made by a multidisciplinary internal forum (the Group Admission Committee or GAC).
Minimum requirements for applicants

Applicants need to comply with the five admission criteria (see below) to gain access to the Euroclear system. These admission criteria are risk-based. Upon admission, the participant must comply with the admission criteria on an ongoing basis. Access to EB is granted on business, legal and risk considerations, which take into account the regulatory environment governing EB and the limited risk profile EB should maintain as a financial market infrastructure. As such, EB must:

- not admit natural persons, as those may not participate in a securities settlement system (SSS) according to the SFAct
- allow fair and open access to legal persons intending to become a participant in the Euroclear System with due regard to risks to financial stability and orderliness of the financial markets
- set risk-related admission criteria to control the risks that could arise from participants using the Euroclear System and ensure that participants meet these admission criteria on an on-going basis
- identify and assess specific risks resulting from the admission of entities that are not subject to supervision in the EU
- comply with applicable Anti Money Laundering (AML) legislation

EB will at all times look to protect the integrity of the Euroclear System as an SSS with a broad variety of participants. EB may therefore take into consideration any relevant risk for EB, the Euroclear System or its participants when assessing any application file.

Participation criteria and requirements

Prerequisite to admission to Euroclear Bank

An applicant must meet the following preliminary conditions:
- be established in a jurisdiction that is not subject to sanctions or not subject to a call for action from the Financial Action Task Force (FATF) in the context of the fight against money laundering and terrorism financing
- provide adequate information enabling EB to meet the applicable anti-money laundering and terrorism financing requirements that apply to EB

In addition, in order to be compliant with Foreign Account Tax Compliance (FATCA) and Common Reporting Standard (CRS), EB:
- determines the FATCA and CRS status of each participant (and applicant); standard forms exist for that purpose
- applies restrictions on the holding of certain securities in the Euroclear System by non-FATCA compliant entities
Categorisation of applicants

An applicant must demonstrate that it meets the five admission criteria listed below. These are the same for all applicants, with additional requirements applicable in certain circumstances depending on whether the applicant is a standard client, a specific regulated client or a specific client to reflect the relative risks associated with the client-type.

<table>
<thead>
<tr>
<th>Standards clients</th>
<th>All those falling in the definition of client in the SFAct whether or not established in the EU and those considered as ‘institution’ which covers credit institutions, investment firms, public authorities and publicly guaranteed undertakings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Any other legal entity established in the EU and falling under the supervision of any competent authority in the meaning of the EBA, ESMA and EIOPA regulations or EMIR (CCPs, insurance undertakings, UCITS, AIFs)</td>
</tr>
</tbody>
</table>

| Specific Regulated clients | Any other legal entity established and regulated outside the EU or any legal entity listed on a stock exchange |

| Specific clients | Non-regulated legal entities, whether or not established in the EU |

This approach takes into account the applicant’s exposure to anti-money laundering and applicable sanction regimes, regulatory/supervisory status and place of permanent establishment.

As provided in the Operating Procedures of the Euroclear System, Specific Regulated Participants and Specific Participants must comply with specific additional requirements to mitigate potential additional risks resulting from their participation in the Euroclear System. They must bring appropriate evidence enabling EB to adequately consider and handle their application.

Admission Criteria

Any applicant is required to meet the following five admission criteria:

- Adequate Financial resources

Demonstrate the possession of adequate financial resources to run its business on a ‘going concern’ basis and meet its obligations towards EB, the Euroclear System and its participants.

60 as per the implementation of the SFAct.
• **Operational & technological capacity**

Demonstrate adequate operational and technological capacity to participate in the Euroclear System, to ensure business continuity and avoid material adverse impact on the integrity of the Euroclear System.

• **Legal capacity**

Demonstrate the legal capacity and ability to accept and comply with the Terms and Conditions governing use of Euroclear System (i.e. the rules of the Securities Settlement System in the meaning of Directive 98/26/EC).

• **Internal control & risk management**

Have an appropriate internal control and risk management framework in place to preserve the integrity of the Euroclear System.

• **Ethical standards**

Have adequate ethical standards that protect the integrity of the Euroclear System.

EB may also impose additional conditions on applicants on a risk-based basis. For instance, additional conditions may be imposed in order to avoid that EB becomes exposed to additional reporting, disclosure or other legal, tax or regulatory requirements.

Access to other CSDs or FMI (e.g. central counterparties, trading venues, etc.) can be granted by admitting such entities as a Standard Participant, in which case the above criteria will apply or via Non-Standard Access. Acceptance or refusal of Non-Standard Access requests is based on a comprehensive risk assessment and procedures have been documented as such.

**Key consideration (KC) 2:** An FMI’s participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI’s specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least restrictive impact on access that circumstances permit.

EB admission criteria mentioned in KC 1 comply with the SFAct, are justified by safety and aim to limit either specific risks, including financial risks (financial resources requirement), operational risks (technology capability criterion) and legal risks (legal capacity requirement), or risks in general (internal controls and risk management and ethical standards).
The admission process and criteria are documented in the Operating Procedures of the Euroclear System, which form part of the Terms and Conditions governing use of Euroclear and are publicly available on www.euroclear.com.

Key consideration (KC) 3: An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a client that breaches, or no longer meets, the participation requirements.

Sponsorship Process

EB has set up a Sponsorship Process to ensure ongoing monitoring of and compliance with the Admission Process described under KC 1.

A sponsorship consists of an initial know your customer (KYC) exercise upon admission, which is followed up by a regular KYC process. This process results in a review of the 2 preconditions to admission and the five admission criteria with the final aim of either confirming that a participant continues to comply with the criteria or identifying non-compliance that can ultimately lead to exclusion from the System.

Further, it aims to:

- identify and assess potential financial and non-financial risks arising from business relations with participants and, if indicated, escalate these to take action
- regularly monitor certain issues that have affected individual participants since the last review
- avoid damage to Euroclear’s reputation and limit financial losses or liabilities deriving from external events that impact the participants
- establish accountability for the sponsors of a participant by defining the roles and responsibilities of the various departments and committees involved in the process

Two types of sponsorship reviews exist:

- a review of the admission criteria owned by Credit and Commercial divisions, for which the frequency depends on the internal rating of the entity and its group
- a review limited to the Ethical standards criterion in function of the AML review cycle

The detailed analysis performed by various departments for each criterion triggers a score for the criteria (usually 3 possible values: sufficient, insufficient & watch.

The different sections of the sponsorship file containing the analysis, the documentation of the assessment and the scoring of the 5 criteria are filled in by the different departments based on their ownership.
Governance of the Sponsorship Process

The Sponsorship Process takes into consideration the input from various departments including Commercial, Risk, Legal, Compliance and the Credit Department, flowing through an internal advisory committee (the GAC) for decision-making by the EB MC.

The GAC regularly reviews the participant profiles and their impact on the overall business portfolio; annually reviews participants with insufficient scores of compliance with the admission criteria and recommends required actions to the EB MC (for both sponsored and refused entities), if necessary and proposes possible changes to the admission strategy or process.

The EB MC is responsible for taking the decision to refuse or accept a participant’s sponsorship in view of the GAC recommendation and, in case of refusal, for taking the decision to suspend or terminate the participation in the Euroclear System of the participant.

Participant obligations

EB’s participants are required to notify EB in writing, with appropriate supporting documents, of any material event or changes which may affect the information supplied by them as part of their application or which may affect their ability to comply with the criteria listed above.

EB’ participants also agree to comply with any request, which EB may reasonably make from time to time, for additional documentation which may evidence such continued compliance or to carry out additional tests in relation to their technical and operational capacity.

Suspension & Orderly Exit

The Terms & Conditions governing use of Euroclear, which are publicly disclosed, state that EB may terminate the participation in the Euroclear system by giving at least 30 calendar day notice, provided that EB may effect such termination upon notice effective immediately either if:

- any of the following events shall occur:
  - liquidation or bankruptcy or initiation of any proceedings with respect thereto
  - application for composition with participant’s creditors, whether in or out of court, or for deferment of its debts
  - attachment or execution upon or against any of the participant’s assets or property

- the participant no longer meets any of the admission criteria set out in the Operating Procedures and continued participation in the Euroclear system could be materially prejudicial to the interests of the Euroclear system, Euroclear Bank or other participants generally.

EB will further detail in its Operating Procedures, the consequences of any suspension or termination of the participation in the Euroclear System. Such rules primarily aim to minimise any disruption that a suspension or termination could have on other participants or the System generally.
Principle 19: Tiered Participation Arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Key consideration (KC) 1: An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.

Euroclear Bank (EB) has contractual relationships with its participants only. Securities and Cash accounts are opened in the name of the participants and only participants have entitlement to the securities and cash credited to those. Credit lines are only granted to participants and are fully collateralised (see Principles 4 & 5). As such, EB neither opens accounts with nor contractually recognises any indirect or tiered participations (“indirect participation”).

EB owes a duty of redelivery or restitution of assets deposited by a participant uniquely to that participant or to its legal successor even if EB is aware that its participant owes generally corresponding duties to its underlying clients.

Therefore, underlying clients of participants do not create material operational or financial risks for EB. Nevertheless, disruptions in the activity of a large underlying client of a participant could possibly affect the efficiency of settlement in the Euroclear System. Hence identifying these large underlying clients and ensuring that the concerned participant have the adequate operational set-up in contingency situations is important.

In accordance with the EU Commission Delegated Regulation 2017/392 implementing CSDR, EB has obligations to monitor operational risks that may be posed by key participants. This requires EB to identify “Key Participants” (as defined in article 67(1) of the CSDR RTS) and, potentially, the underlying clients of these Key Participants.

The Terms and Conditions Governing Use of Euroclear (T&C) explicitly allow EB to gather information on the underlying clients from all its participants as part of its ongoing risk management, Sponsorship Process (See Principle 18 for further details). Participants must comply with any request for additional information about their clients which EB may reasonably make for the purpose of identifying, monitoring and managing any material risks that they or their clients may cause to the Euroclear System, to EB or to other participants generally.

EB is strengthening these frameworks in order to further identify, monitor and mitigate risks from underlying clients of participants to anticipate exposures participants may have on their underlying clients that could ultimately have repercussions on EB and the System in general.

61 Except to the extent any cash or securities balance is posted as collateral in favour of EB.
EB gathers Information on the underlying clients’ participants via the following means:

- **Account Opening**

  Data is collected on the various account types:
  - Own account
  - Client segregated account
  - Omnibus account

  Participants may open several accounts and organise segregation as per their preference or requirements applicable to them. Account opening forms reflect whether the securities are proprietary securities or client securities (omnibus or individual).

  Where a client account is segregated, EB’s participant discloses the identity of its client (as defined under applicable Anti Money Laundering (AML) regulations). This information is stored in the systems of EB.

  Where a client account is opened in omnibus form, the participant is commingling the assets of several of its underlying clients. EB will set up a process to identify the concentration on a single underlying client in an omnibus structure as a means to mitigate potential concentration risk.

- **Key Participants**

  The criteria to be considered a Key Participant are based on the following dimensions:
  - transaction volumes
  - potential impact on other participants and the securities settlement system of the CSD as a whole in the event of an operational problem affecting the smooth provision of services by the CSD
  - material dependencies between participants and participants’ clients, where such clients are known to the CSD, that might affect the CSD

  EB is developing a framework to be implemented in 2018 which aims to:
  - identify its Key Participants on an ongoing basis
  - ensure that its Key Participants meet its operational requirements
  - ensure that its rules, procedures and agreements allow it to gather relevant information about its Key Participants' clients to manage material operational risks to the CSD arising from tiered participation arrangements. Such operational risks are managed in line with the Corporate Risk Board Policy
  - identify Key Participants’ underlying clients responsible for a significant proportion of transactions processed by the CSD
Process

Step 1: As half of the activity in the Euroclear System is generated by a limited number of participants, EB will qualify a participant as a Key Participant if it belongs to that group of participants.

Step 2: EB will also aim to identify underlying clients in omnibus accounts of Key Participants that represent a significant volume of the total activity of Euroclear Bank. This identification of large underlying clients will also allow EB to determine the total volume of activity of large underlying clients even if they use several Key Participants to access EB.

The list of Key Participants is based on aggregated data over a 6 month period and is reviewed twice a year.

- Admission and Sponsorship Process for Participants

One of the requirements of EB’s admission and ongoing monitoring of participants (the Admission Process and the Sponsorship Process - see Principle 18), is the requirement for participants to have “appropriate internal control and risk management framework in place, commensurate with the risk profile, capital strength and business strategy of the company in order to preserve the integrity and reputation of the Euroclear System”.

The outcome of the Sponsorship Process provides EB with the needed comfort that participants adequately manage their own activity (including their clients).

Key consideration (KC) 2: An FMI should identify material dependencies between direct and indirect clients that might affect the FMI.

For Key Participants, EB reviews every six months the depot and activity levels to identify whether there is a material concentration of activity (measured by either depot or transactions) with one or more of its participants.

If a material concentration is identified, further assessment is required to mitigate potential risk arising from this concentration.

This effort will be broadened to all participants where concentration risk is identified based on the risk methodology framework currently being developed.
EB will monitor Key Participants i.e. participants with a strong concentration of depot/activity with EB. For these and other large participants, material dependencies will be checked at the underlying account(s) level.

As said in KC 1, underlying clients of participants do not create material risks for Euroclear Bank.

In respect of Operational risk, there is no recognition of indirect participants as meant by the SFD; all transfer orders of participants, whether or not entered into the CSD System by the participant for its own benefit or acting for an underlying client follow a single set of settlement finality rules.

For other risks (Credit, Liquidity etc.), as there is no contractual relationship between EB and the underlying clients of EB participants, these are not registered or accounted for. Concentration risk is assessed as per KC 1. As part of the strengthening of frameworks, mitigating actions and reporting is being formalised as well.
Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor and manage link-related risks.

Key consideration (KC) 1: Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.

Governance

EB Network Management is responsible for the set up and the maintenance of EB’s CSD links and related network of counterparts, and their respective market environment. The principles of the set up and maintenance of such links are described in the EB Network Management Policy Handbook, which is updated and reviewed periodically and is approved by the Euroclear Bank Management Committee (EB MC).

The various types of links are as follows:

- **Direct**: a ‘direct link’ means a CSD link whereby EB becomes a participant in the securities settlement system of another CSD under the same terms and conditions as applicable to any other participant in the securities settlement system operated by the CSD.

- **Indirect**: an ‘indirect link’ means an arrangement between EB and a third party other than a CSD that is a participant in the securities settlement system of another CSD. Such link is set-up by EB in order to access the other CSD.

- **Interoperable**: an ‘interoperable link’ means a CSD link whereby two CSDs agree to establish mutual technical solutions for settlement in the securities settlement systems that they operate. To date, EB only manages one interoperable link i.e. the “Bridge” with Clearstream Bank Luxembourg (CBL).

- **Relayed**: a 'relayed link' means a CSD link whereby EB accesses a CSD through another CSD. Such arrangement is composed of: i) a direct link between Euroclear and a so called intermediary CSD and, ii) a direct or indirect link between the intermediary CSD and the so called relayed CSD.

Process

Before assessing a link arrangement, EB conducts a general assessment of the prospective link which is subject to the approval of the EB MC. If approved, the details of the market and future link are assessed and worked out.
This assessment is made against EB’s criteria in line with CSDR requirements. This assessment is conducted on two levels: at market environment level and on the contemplated counterparts\textsuperscript{62} level.

- **Market environment level:**

  *Set up of new market*

  EB performs a rigorous risk assessment of the market environment supported through local legal opinions. This is considered a pre-clearance process. The market risk assessment requires positive assurance on a wide range of criteria including amongst others a good understanding of the local regulatory requirements, ownership restrictions, asset protection mechanisms with a focus on insolvency situations, tax implications, disclosure requirements, account structure, requirements around anti-money laundering and anti-terrorist financing, political stability and government effectiveness and economical and financial stability of the country.

  Based on this, a recommendation is submitted to the EB MC who is responsible for the approval of establishing new markets/links and for the appointment of counterparts.

  *Monitoring of market*

  EB monitors the compliance with the above set criteria on a continuous basis and on a cyclical basis EB performs an end to end review of the full link(s) set up. This review consists of a full review of all the elements impacting the link(s) amongst others:

  - country risk assessment (i.e. continuous monitoring of compliance and ethical risks, macro-economic situation and financial risks, market initiatives and their impacts)
  - end to end risk assessment on links (including confirming market practices, set up and flows, reassessing any counterparts, enforcement of contractual arrangement, business continuity processes and IT security measures)

- **Counterpart level:**

  Prior to setting up a new link or appoint a new counterpart, EB performs a rigorous risk assessment (including the custody risk aspect) on a number of criteria in line with CSDR. These criteria include requirements related to Account structure, Asset accessibility, Compliance, Legal, Business Continuity, Operational capacity amongst others. Based on the outcome of this assessment, Network Management submits a recommendation to the EB MC which is responsible for the approval of a new link and the appointment of counterparts.

  Once the CSD link is established and the relevant counterparts appointed, EB monitors the compliance with the above-mentioned criteria on a continuous basis. CSD links and

\textsuperscript{62} While the EB T&C refer to the generic concept of « depository », when referring to issuer CSD activity or investor CSD activity, EB uses a series of concepts which are regrouped here under the generic name of « counterparts ». 
counterparts are reviewed at least annually and the outcome of such review is submitted to EB MC for re-approval of the existing links and counterparts. Any changes to the CSD links and counterparts are reported to the EB Board.

Selection of counterparts

Network Management coordinates the selection and (risk) assessment of any new counterpart with the input from the different stakeholders such as Compliance, Risk Management, Legal, Credit and other departments.

The selection and (risk) assessment are done through:
- a “Request for proposal” process, whereby the identified and short listed candidates are reviewed against EB’s criteria in case of indirect link which include among others a strong local market presence with the ability to influence the development of the markets towards international investors, account structure, access to assets, anti-money laundering processes, financial strength, business continuity practices, operational and STP capacity and service quality requirements. The assessment against these criteria need to allow EB to comply with its regulatory obligations
- an on-site due diligence visit of the selected candidate, prior to its appointment, in order to obtain evidence on the compliance of the entity with the above-mentioned criteria

The risk assessment coordinated by EB Network Management is submitted for review to the EB ROC which issues a recommendation to the EB MC, the latter being accountable for the appointment of counterparts.

The result of such assessment is then presented to the EB MC for approval.

Monitoring of CSD link / counterparts

Once the CSD link is set up, EB Network Management, with the support of other relevant EB departments performs an on-going monitoring of the compliance with the above-mentioned criteria to:
- identify and manage any changes in any of the selection criteria and
- ensure that the counterpart(s) fulfil(s) its obligations on an ongoing basis towards EB.

This monitoring is done through:
- annual certification of contractual arrangements;
- annual due diligence review and ad hoc on-site visit;
- annual performance reviews to ensure that service levels are in line with EB requirements;
- continuous monitoring of financial strength and creditworthiness
- CSD link review

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63 Risk, Local Security and Operating Committee
64 Performed by the Operations department
65 Performed by the Credit department
Should any material change be identified compared to the initial or last assessment, Network Management will, with due involvement of Risk Management, formally identify, assess and record the new or changing risks and ensure appropriate governance depending on the type/level of such risks in accordance with the risk management framework established by EB. For more details on the risk management framework, please refer to Principle 3.

Every year, all the CSD links and network of counterparts are formally approved by the EB MC with a focus on changes compared to the previous year.

**Key consideration (KC) 2: A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMI's involved in the link.**

As part of the assessment described under KC 1, EB assesses the applicable local legal framework including elements amongst others: standard of care and liability undertaken by each of the parties, asset protection/insolvency proceedings and absence of encumbrances on assets, assets accessibility, securities/services review, confidentiality, data confidentiality and tax analysis. This assessment is reviewed on a regular basis to ensure changes in law are captured.

At individual links and counterparts level, EB ensures the establishment of a contractual arrangement with an unambiguous choice of law, clearly setting out the respective rights and obligations of all parties.

The contractual framework supporting the links includes all contractual documentation with all counterparts (the number of counterparts varies depending on the type of link, direct or indirect). These documents are governed by the laws of the jurisdiction where the counterparts are located. They cover elements such as eligible instruments and representations made by the parties (such as the possibility for such parties to validly commit to the terms of the contract), terms and procedures for settlement, record keeping and safekeeping, insurance coverage, standard of care, liabilities of each party to the contract, confidentiality measures and data protection and operational service description.

For all links it maintains, EB obtains a legal opinion from a law firm with expertise in that jurisdiction, which covers the validity and enforceability of the contracts, asset protection and security eligibility matters amongst others. Revisions of contracts are performed when needed e.g. due to changes in local legislation or legislation applicable to EB, new instruments or services being added to the link, set up of the link being changed.

The legal and operational terms and conditions applicable in the context of the Bridge link are governed by the joint Euroclear-Clearstream Bridge Agreement which is governed by Luxembourg law.
EB does not obtain credit from CSDs with which it establishes links.

EB does not grant credit to the CSDs that are participant in the Euroclear System. If credit would be required the CSD would have to meet the criteria and conditions for the granting of credit as described in Principle 4.

For the interoperable link EB maintains with CBL, called The Bridge, EB and CBL have credit exposures on each other.

EB has a credit exposures (and related liquidity risk) on CBL:
- when EB delivers securities through the Bridge that need to be paid for by CBL, EB has an exposure on CBL
- when CBL delivers securities through the Bridge that need to be paid for by EB, CBL has an exposure on EB

To cover the credit exposures EB and CBL have on each other, each of the CSDs has a letter of credit (LoC) in favour of the other. For the exposure EB has on CBL, the LoC is provided by CBL to EB in the form of a stand-by letter of credit established by a syndicate of 29 international banks. The stand-by letter of credit is payable on demand and there can be no limitations imposed by the syndicate on the conditions of such a demand. The letter of credit can be called upon the issuance of a notice of demand that should be honoured by the participating banks on the third business day after the receipt the notice. The LoC is renewed at least annually taking into account the evolution of Bridge activity. The LoC complies with article 16 (“other financial resources for exposures in interoperable links”) of the EBA RTS. As this LoC is provided by a syndicate of creditworthy banks, it is considered to be equivalent to high-quality collateral.

A capping mechanism and several controls aims to keep the net exposures (based on proposed deliveries and re-deliveries by the other CSD). Several controls aim to keep the exposure under the amount of the LoC. The risk management principles of the Bridge ensure that at each Bridge exchange, a checking and verification process is performed to ensure that EB's exposure remains below the level of the LoC in EB's favour. Exposures on CBL in one currency can also be secured by cash that CBL holds with EB in another currency ('currency set-off').

There can be (partly) unsecured exposures over the Bridge, notably linked to custody booking calculation differences and the refusal of CSDs to accept certain proposed deliveries due to a lack of cash or credit of a buying participant in CBL. As a result of the functioning of the Bridge risk management mechanism, exposures can remain uncovered intraday for only a short period of time.

In order to comply with this Principle, advanced income and redemptions between the EB and CBL are systematically secured by the respective LoC.
EB is upgrading the current Bridge technical infrastructure and risk management principles to remove the possibility of uncollateralized credit risks over the Bridge by end-2018.

An additional risk mitigation tool to protect EB from any residual credit exposure is the “Right-to-Debit”, as measure of last resort in extreme circumstances such as a CBL default scenario. As part of the contractual framework between EB and its participants (documented in the Operating Procedures that form part of the T&C), this mechanism allows EB to reverse any cash credits to the participants involved in Bridge transactions, and this to cover any unpaid amounts due by CBL. The debit is provisional subject to the resolution of any claims towards CBL, including but not limited to the LoC, but can become final for the portion of the exposure that cannot be recovered. This mechanism has never been used to date.

**Key consideration (KC) 4: Provisional transfers of securities between linked CSDs should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.**

Provisional transfers of securities are not possible as EB only books securities once they have obtained final receipt of securities on its account in the market.

An exception exists for EB’s link with DTC in the US market, where newly-issued money market instruments are credited provisionally by DTC. EB prohibits the retransfer by blocking such securities in the participants’ accounts until the booking is final on EB’s account in the local market.

**Key consideration (KC) 5: An investor CSD should only establish a link with an issuer CSD if the arrangement provides a high level of protection for the rights of the investor CSD’s clients.**

The initial selection process for the opening of a market link is primarily based on the existence of a high level of protection of participant’s assets under the local market standards and legal framework (Please refer to KC 1 above).

EB obtains legal opinions that confirm among others that the depository’s creditors do not have a claim on EB’s participants’ securities held at the depository. Further details with regard to asset protection and custody risk are available in the sections covering Principle 1, 11 and 16.

The contractual agreements include provisions aiming at the protection of participants’ assets (such as segregation of EB’s participants’ assets from those of the depository or those of other clients/participants of the depository, a prohibition of sub-deposits without prior approval by EB, and/or the existence of an insurance coverage for the securities held via the link).

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66 Euroclear Bank Operating Procedures, Section 2.3 Entries in Participant Account and Online Market Guide - USA
To ensure a high level of protection, EB also ensures control processes are in place to reconcile on a daily basis with all CSD’s (direct links) or intermediaries (indirect links). This is done through receipt and validation of daily statement of balances and movements by EB.

With regards to the Bridge, EB performs daily reconciliation for securities and cash positions.

**Key consideration (KC) 6: An investor CSD that uses an intermediary to operate a link with an issuer CSD should measure, monitor, and manage the additional risks (including custody, credit, legal, and operational risks) arising from the use of the intermediary.**

All selection criteria for intermediaries used to operate a link are meant to avoid any risk, covering risks ranging from custody risk to financial, operational and reputational risk when selecting an intermediary and on an ongoing basis.

Intermediaries must have a good reputation and be financially sound. They must comply with data protection and confidentiality, operational risk management, security measures and business continuity requirements. Other criteria include anti-money laundering requirements, operational readiness and service quality requirements.

Network Management has different tools to monitor and manage the risks during the lifecycle of a link through the link assessment framework which includes:

- Global overview of all the CSD links and counterparts in the network
- Country Risk Dashboard monitoring compliance of the various risk assessment criteria
- Annual due diligence which reviews the compliance of the CSD link and/or counterparts against the different set up/monitoring criteria
- Market Link Review that includes an overview of all the market initiatives impacting the link
- Daily reconciliation between EB and the counterpart with EB requesting the counterpart to perform a reconciliation with the CSD
- Re-approval report to the EB MC on a regular basis, highlighting any changes if any and request the EB MC to sign off the current links EB has within its network

The liabilities of the counterparts are defined in their agreements with EB. Intermediaries are liable for losses caused by the non- or mis-performance of their duties and obligations and the holding of securities by it or with the CSD, subject to the usual force majeure clauses and other limitation of liability clauses.

**KC 20.7, 20.8 and 20.9 are not applicable to EB.**
Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Key consideration (KC) 1: An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.

Euroclear Bank’s offer constantly evolves to meet its participants’ needs. Examples include the transition from batch to real-time processing (both for the main Overnight processing period, and for the electronic ICSD ‘Bridge’); offering new asset classes and markets (e.g. collateral management services for OTC derivatives); and a new web-based communication channel (EasyWay). As part of its monitoring of goals and objectives, Euroclear Bank also follows up generic objectives, e.g. adherence to agreed budgets, maintaining/improving the control environment (both on internal activities and activities outsourced).

Euroclear Bank’s User Committee and its role

Euroclear Bank (EB) has set up a User Committee, which is a body that forms part of the internal governance of Euroclear Bank. Its objective is to voice the opinions of the several participants’ groups, as per the mandate the User Committee received in line with legal requirements. To ensure that the suggestions of the User Committee accounts for the variety of participants in the Euroclear Bank’s system, the committee’s membership reflects Euroclear Bank’s client base, and it is composed of representatives of the main relevant markets segments.

Its purpose is to possibly:

- provide independent advice to the EB’s Board on key arrangements that impact EB’s members
- provide non-binding opinions to EB’s Board on pricing structure
- make request for implementation of new Delivery versus Payment (DVP) settlement through links

To support them providing independent advice to the Board on EB’s service level, the User Committee is regularly informed of the performance of the Euroclear system, as well as audit findings relating to the topics covered by its mandate.
Participants’ surveys

Feedback from Euroclear Bank’s users is collected and evaluated yearly via the “Client Survey”, open to all EB participants. This survey enables Euroclear Bank to periodically assess the level of satisfaction and needs of participants for the various existing services offered by Euroclear Bank. Based on this feedback, Euroclear Bank assesses the market’s need for further key service enhancements that may be introduced over the next months and years. Over recent years, the participants’ satisfaction scores have improved significantly. This is completed by regular barometer reviews (i.e. limited scope surveys taking place throughout the year) per service to assess participants feedback.

Other initiatives

To understand the needs of participants and their evolution, Euroclear Bank performs regular competition analysis, and follows up market developments and product/service evolution through the review of press articles and specialised publications, their presence in various conferences and round tables and ad-hoc consultation with participants and market players. These actions are key triggers to support the conception and the development of EB business strategy.

EB is also a member of a series of advisory groups in the financial and post-group trade industry. It enables EB to adapt to the market evolution and to the needs of its participants. EB answers to consultations on regulatory evolutions that can impact EB and the services it offers to its participants.

Key consideration (KC) 2: An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

Mission Statement

EB’s goals and general objectives, set out in its mission statement (publicly available on the Euroclear website) are to:

- support an open marketplace where scale and connectivity across the spectrum of market participants are competitive strengths
- have the financial discipline of a ‘for profit’ entity and the commitment to support market stability, deliver shared economies of scale and develop markets locally and globally
- serve the public good by ensuring the efficiency of markets and actively enabling the reduction of risk
Corporate objectives and the Positive Assurance Report

EB’s corporate objectives provide high level qualitative targets setting up the business priorities. These objectives are assessed quarterly by senior management. Operational performance is measured through the Positive Assurance Report (PAR), which is produced and validated by business owners monthly, and assessed by the senior management representatives and the Risk, local security and Operating Committee (ROC) quarterly.

The ROC is an internal Euroclear Bank committee, reporting to the Euroclear Bank Management Committee, that includes senior management representatives of all business operations of EB as well as senior representatives of support functions such as IT, Risk Management, Product Management, Finance, Compliance. Through this wide composition Euroclear Bank ensures that all aspects of potential risks or threats are considered.

The PAR being a key component of EB’s Risk Management Framework it is further discussed in other sections of this document including Principle 3 (Risk Management Framework), Principle 15 (General Business Risk), Principle 17 (Operational Risk).

The PAR is being revised to better reflect all risk categories. This review will be rounded by end 2018.

Euroclear Bank’s KPI’s

With respect to all support functions (including Risk Management), service levels and measurable Key Performance Indicators (KPIs) have been identified and are monitored and reviewed quarterly by the ROC.

In case a KPI is missed, the relevant department within Euroclear Bank investigates the root cause and defines an action plan.

In case material issues are detected (e.g. system incidents), immediate escalation occurs involving senior business managers, IT representatives and other stakeholders. These cases are also reported to the ROC and immediate actions are taken, also including post-mortem assessment and remediation plans.

These KPIs are consistent with the EB objectives that are set by the Board of Directors, on an annual basis (referred to as the ‘CEO and MC Objectives’; cf Principle 2 above), and they are monitored and reviewed quarterly by the ROC and the EB MC, where action plans and remediation are also discussed.

Example: IT Performance

Euroclear monitors a large set of IT KPI’s for its different businesses, covering among others:

- the availability (uptime) of the systems

67 The senior management is composed of division heads and Euroclear Bank Management Committee
• the ability to meet deadlines
• the overall performance of the systems

The KPIs for key systems are set before the start of each year, daily checked, monitored monthly and reviewed by the management quarterly.

Those KPI’s are monitored and reported on a daily basis and discussed quarterly with the management at the ROC.

**Key consideration (KC) 3: An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.**

The efficiency and effectiveness are measured at different levels. The Balanced Scorecard (BSC, which is the document containing the objectives of the year) is used to evaluate the performance of senior management against the strategic priorities. The BSC objectives include financial, business, operational, risk and other objectives.

All support divisions that are relevant for the efficiency and effectiveness of Euroclear Bank have identified KPIs which are tailored to their specific functions (e.g. IT departments monitor system performance, availability and deadline indicators, Finance monitors invoice processes, Legal monitors their capability to provide timely legal advice). Euroclear Bank’s CEO and her direct reports evaluate on a quarterly basis the efficiency and effectiveness across all operations and across the support activities based on these KPIs as well as a qualitative assessment of the services received. On an annual basis, these KPIs are reviewed for their relevance among other as part of the service delivery plans the divisions of ESA prepare as service provider for other group entities, including EB.

An evaluation by participants is done every year during the annual “Client Survey” mentioned above, and includes a full-scope review of participants’ feedback with respect to all aspects of services provided. Going forward, the Euroclear Bank User Committee also enables users of Euroclear Bank to voice client feedback on the efficiency and effectiveness of the CSD’s processes via formal advices to the Euroclear Bank Board of Directors.
Principle 22: Communication procedures and standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

**Key consideration (KC) 1: An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.**

Euroclear Bank (EB) uses internationally accepted procedures and standards for communicating with participants and other parties.

Interaction between EB and its participants is either application-to-application (i.e. STP communication solutions) or user-to-application (i.e. screens). International standards are used in both, but are – for integration purposes – more relevant or needed for the application-to-application channels.

This fully automated interaction on application-to-application channels is possible today in International Organization for Standardization (ISO) standards and proprietary formats. EB continues to invest in ISO standard automated communication, it does so through the yearly SWIFT releases (thus adopting the most recent ISO changes relevant to EB’s business) and by ensuring that new products and evolutions of existing products use the appropriate ISO standards.

**Corporate actions**

In the area of corporate actions, ISO 15022 standards are available, in addition to legacy support on ISO 7775. EB has invested over the last few years to increase Securities Market Practice (SMPG) compliance and it will continue to do so. EB intends to use the new ISO 20022 standards, when required by the participant community or other key stakeholders (e.g. Eurosyste).

**Securities identification**

EB uses the International Security Identifier Number (ISIN) code to identify financial instruments. Participants can use the ISIN to instruct and receive reporting with the ISIN if they wish. In addition, the Common Code (a securities identification code shared by EB and Clearstream Banking Luxembourg) is used to identify securities.
Settlement

In the area of settlement, ISO 15022 standards are available, in addition to legacy support on ISO 7775. These standards are applied both for internal and external settlement (at other CSDs, through direct or indirect links). Additional standardisation within settlement instruction and reporting is achieved through the use of The Bank Identifier Code (BIC) to identify a counterparty. Another possibility is a five-digit EB code corresponding to a local counterparty as identified in EB online counterparties database available via my.euroclear.com > My Apps > Counterparties search.
Principle 23: Disclosure of rules, key procedures, and market data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable clients to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Key consideration (KC) 1: An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to clients. Relevant rules and key procedures should also be publicly disclosed.

The structure of Euroclear Bank’s public disclosures can be summarised by the following exhibit:

The rules of the Euroclear System operated by Euroclear Bank (EB) are documented in the Terms and Conditions (T&C) which are made of two documents:

- the Terms and Conditions governing use of Euroclear (T&C), containing the description of the key rights and obligations of EB and the participants, when using the Euroclear System
- the Operating Procedures of the Euroclear System (Operating Procedures / OPs) which provide additional details among others with regard to the requirements for becoming a participant, the functioning of the Euroclear System, the rights and responsibilities of
participants, the connectivity to and from the Euroclear Platform and the functioning of Euroclear Bank’s various services

We elaborate on other contractual documentation in the section covering Principle 1 (Legal Basis).

The T&C are available on Euroclear’s website (login and passwords are provided upon request) and detail a.o.:

- the rules for amending the contractual documentation;
- admission rules
- suspension and termination events, including the procedural aspects thereof
- the standard of care applied by Euroclear Bank and the related liability
- rules in case of loss of securities
- rules in case of default of a participant (including insolvency proceedings affecting a participant) in the Euroclear System
- exceptional measures available to Euroclear Bank in case of default of Clearstream Banking Luxembourg (“right to debit”)

The T&C contain dedicated sections on the rights and responsibilities of participants and of Euroclear Bank respectively.

The readability as a whole is ensured through the use of plain language.

EB manages two distinct websites to inform the general public and its participants:

- euroclear.com – the corporate website
- my.euroclear.com – the operational knowledge portal

Euroclear Bank also publishes on its website a set of important documents to provide deeper information on its services and potential risks borne by the participant including a.o.:

- Due diligence pack which elaborate on the due diligence checks performed on third parties
- ISAE 3402 report, that provides substantive information on the operation of controls and procedures implemented at EB along the ISAE 3402 standard
- Pillar 3 disclosures, that provides substantive information on risk management methods and practices, and the organisation of the risk management function at EB, as well as among other things, the actual data relating to exposures and associated capital requirements. Pillar 3 disclosures obey the requirements set in the European Capital Requirements Regulation (CRR)
- Asset protection pack regarding the protection of the holdings in financial instruments of the clients in the books of Euroclear Bank as well as in the books of the Euroclear Bank Depositories
EB’s website contains high-level information about the system’s design and operations:

- the ‘About us’ section provides a general description of EB’s business, mission, participants, structure, history and rules
- in the ‘Services’ section, the participants can find relevant information about the various services

More detailed information about these services can be easily retrieved through the Euroclear Knowledge base on the Euroclear website (e.g. on Collateral Management, an overview of all operational, tariff and legal documentation).

These documents, among others, complement the T&C and give the participants a view on the design and operations of the specific services. EB’s CPMI-IOSCO Disclosure Framework also provides useful information about the bank’s operations.

The degree of discretion that EB has in applying the T&C and OPs are specified in those two documents.

The User Committee of Euroclear Bank forms part of the organisational arrangements aiming at maintaining a dialogue between the FMI and its users on a series of topics, including access, service level, relevant audit findings and efficiency of the System.

New participants receive a ‘Welcome Pack’. As mentioned on the website, Euroclear offers various training options to help them get the best out of its range of products and services:

- local courses
- online training
- e-Learning
- on-site visit

This is complemented by regular newsletters, brochures and other material published regarding specific topics. For example, operational newsflashes are published on the website regularly, available to participants only via the password-protected part of the website. Registered participant subscribers to these newsflashes also receive emails to alert them to the newsflash. To promote adequate understanding of its rules and procedures as well as the risk they may face from
participating in the FMI, EB provides training to the participants either bilaterally or collectively (including the training options and documents mentioned in EB’s Welcome Pack).

The readability/clarity of the contractual documentation as a whole is ensured through the use of plain language.

**Key consideration (KC) 4: An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.**

On the public part of its website, EB publishes the General Fees brochure. This document provides detailed information on the applicable fees for each type of service and the applied discounts (sliding scale). The tariffs for all services are thus available online. The knowledge base page furthermore contains price examples, conversion tables and a fees reporting guide. The conversion table allows the public to compare prices of Euroclear’s services and fees with the CSDs of the Euroclear group and with other CSDs in Europe.

EB applies the European Code of Conduct for Clearing and Settlement (issued on 7 November 2006) and complies therefore with the following price transparency requirements:

- to enable participants to understand the services they will be provided with, and to understand the prices they will have to pay for these services, including discount schemes;
- to facilitate the comparison of prices and services, and to enable participants to reconcile ex-post billing of their business flow against the published prices and the services provided;
- More information can be found on the Euroclear website via my.euroclear.com

Each Business Unit within Euroclear determines fee rates and discounts.

In accordance with CSDR, EB will disclose any discounts to core services. At the time of publishing these disclosures, there were no discounts granted to any participants on core services.

EB generally follows a process of informing participants and the public of changes to its services and fees through Newsletters as they occur. The newsletters announce the change, are posted on the website and are sent proactively by email to participants and registered users of the website. EB updates also the tariff brochure.

The tariff update is issued once a month, taking into account a minimum of 10 business days before the implementation of a tariff change if it has an adverse impact on participants. The entry into force of a tariff change that is favourable to participants can be any time upon publication.

Depending on the nature, magnitude and topic of the change, Euroclear may elect to further publish the new tariff or service by attracting the media’s attention to it via press releases, advertising campaigns, journalist interviews, and the like. This is a judgment call rather than a set procedure.
EB publishes an updated Disclosure Framework (DF) on a regular basis. Due to the publication of new requirements enacted in CSDR, the DF was not updated in 2016.

Euroclear discloses material information on the company itself and the services it provides to participants, predominantly available through its digital channels. Such information includes high level overviews, updates on new service developments or relevant market news, as well as detailed descriptions of its services, procedures and the rights and obligations of participants. The information is updated on a regular and timely basis.

EB also discloses risk management information such as the CRR Pillar 3 disclosure and information on Euroclear’s business continuity. We elaborated on the disclosed information available online in KC 1 above.

Statistical data is published regularly (quarterly) comprising statistics on turnover, collateral management and assets under custody, in addition to statistical information provided to supervisors (see on Euroclear website).

The media will vary according to the nature, magnitude and significance of the information. At a minimum, the information will be disclosed in a Newsletter, posted on the website and an alert sent to registered participants and users by e-mail to announce the availability of new information. Some brochures also exist in paper format.

EB may also use other media that are more promotional in nature, but still have a role to play in disclosure. These media include:

- press releases (as part of a communications plan to support the business. Articles with ‘news value’ (e.g. on new or expanded services, operating results or tariff reductions) may appear in the financial trade press and/or on the Euroclear website)
- social media
- adverts
- commercial presentations
- speeches at industry events
- videos/banners on the website and elsewhere
- marketing brochures (in electronic and in paper format)
- internal communications channels

All information mentioned in this Principle is available in English.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AIFs</td>
<td>Alternative Investment Funds</td>
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<tr>
<td>AM</td>
<td>Assurance Map</td>
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<tr>
<td>AMA</td>
<td>Advanced Measurement Approach (for Operational risk)</td>
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<td>AML</td>
<td>Anti Money Laundering</td>
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<td>APS</td>
<td>Appropriation of Pledged Securities</td>
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<td>BCM</td>
<td>Business Continuity Management</td>
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<tr>
<td>BCP</td>
<td>Business Continuity Plan</td>
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<td>BCRA</td>
<td>Business Continuity Risk Assessments</td>
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<td>BIA</td>
<td>Business Impact Analysis</td>
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<tr>
<td>BIC</td>
<td>Bank Identifier Code</td>
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<tr>
<td>BSC</td>
<td>Balanced Scorecard (a strategic planning and management approach)</td>
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<td>CALCO</td>
<td>Euroclear Bank’s Credit, Asset &amp; Liability Committee</td>
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<tr>
<td>CBFA</td>
<td>Commission Bancaire et Financière des Assurances (Belgian Market Authority now renamed FSMA for Financial Services &amp; Market Authority)</td>
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<td>CBL</td>
<td>Clearstream Banking Luxembourg</td>
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<td>CCP</td>
<td>Central Counterparty / Clearinghouse</td>
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<tr>
<td>CDS</td>
<td>Credit Default Swap</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<tr>
<td>CFP</td>
<td>Contingency Funding Plan</td>
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<tr>
<td>CIA</td>
<td>Chief Internal Auditor</td>
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<tr>
<td>CISO</td>
<td>Chief Information Security Officer</td>
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<tr>
<td>COBIT</td>
<td>Control Objectives for Information and related Technology (an international standard in good-practice framework for IT Management and IT Governance)</td>
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<tr>
<td>CIoI</td>
<td>Conflict of Interest</td>
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<tr>
<td>CRO</td>
<td>Chief Risk Officer</td>
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<tr>
<td>CRR</td>
<td>Capital Requirements Regulation (an EU regulation - Regulation (EU) No 575/2013)</td>
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<td>CRS</td>
<td>Common Reporting Standard</td>
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<tr>
<td>CSD</td>
<td>Central Securities Depositories</td>
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<tr>
<td>CSDR</td>
<td>Central Securities Depositories Regulation (European Regulation 909/2014 of 23 July 2014)</td>
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<tr>
<td>CSP</td>
<td>Critical Service Providers</td>
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</tbody>
</table>
IRB models  Internal Rating Based models (for creditworthiness assessment of debtors under RR/CRD)
ISAE    International Standards for Assurance Engagements
ISIN    International Security Identifier Number
ISMS    Information Security Management System
ISO     International Standardization Organization
IT      Information Technology
ITIL    Information Technology Infrastructure Library (an international standard in practices for IT service management)
KC      Key Consideration
KPI     Key Performance Indicator
KRI     Key Risk Indicator
KYC     Know-Your Client
LCH     London Clearing House
LCMT    Liquidity Crisis Management Team
LCR     Liquidity Coverage Ratio
LD      Liquidity Dashboard
LoC     Letter of Credit
MC      Euroclear Bank’s Management Committee
MRM     Model Risk Management
NBB     National Bank of Belgium
NCB     National Central Banks
NFC     Nostro Flow Control (a liquidity management tool in place at Euroclear Bank)
NGC     Nominations and Governance Committee
OP      Operating Procedures
ORBP    Operational Risk Board Policy
OTC     Over-the-Counter
PAR     Positive Assurance Report
PMR     Problem Management Record
PVE     Portfolio Value Estimation
RCSA    Risk & Control Self-Assessment
ROC     Euroclear Bank’s Risk, Local Security and Operating Committee
ROI+    Operational Incidents database
RRW     Recovery, Restructuring and orderly Wind-down
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>RTO</td>
<td>Recovery Time Objective</td>
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<tr>
<td>RTS</td>
<td>Regulatory Technical Standards</td>
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<tr>
<td>S&amp;OE</td>
<td>Suspension and Orderly Exit</td>
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<tr>
<td>SFA</td>
<td>Settlement Finality Act</td>
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<tr>
<td>SFD</td>
<td>Settlement Finality Directive</td>
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<tr>
<td>SMPG</td>
<td>Securities Market Practice Group</td>
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<tr>
<td>SSA</td>
<td>Shared Services Agreement</td>
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<tr>
<td>SSS</td>
<td>Securities Settlement System</td>
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<tr>
<td>STP</td>
<td>Straight Through Processing</td>
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<tr>
<td>SVE model</td>
<td>Security Value Estimation model (a model used by EB to assess the value of collateral and the relevant haircut)</td>
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<tr>
<td>UCITS</td>
<td>Undertakings for Collective Investment in Transferable Securities</td>
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