

# Best Practice Guide for GBP Loans

The Working Group on Sterling Risk-Free Reference Rates

Published in February 2021 – Updated in July 2021

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## Foreword

The overall objective of the Working Group on Sterling Risk-Free Reference Rates (the ‘Working Group’)<sup>1</sup> is to enable a broad-based transition to SONIA (Sterling Overnight Index Average) by the end of 2021 across the sterling bond, loan and derivative markets.<sup>2</sup> This will reduce the financial stability risks arising from widespread reliance on GBP LIBOR, which in the years since the financial crisis has been based on relatively few underlying transactions.<sup>3</sup>

This guide is addressed to all parties active in GBP loan markets, including lenders, borrowers, investors, advisors and legal firms. The Working Group recognises that the loan market involves a wide range of lenders and borrowers, from the most complex global banking groups and largest multinational corporates to the smallest lenders and businesses. Accordingly, the latter of these parties may require additional background information and guidance in respect of the cessation of LIBOR and use of SONIA.

The prevailing view of the Working Group is that overnight SONIA, compounded in arrears, will and should become the norm in derivatives, bonds, and bilateral and syndicated loan markets given the benefits of the consistent use of benchmarks across markets and the robust nature of overnight SONIA.<sup>4</sup> Whilst other benchmarks may be appropriate in certain circumstances, this guide addresses conventions to be used for loans referencing SONIA compounded in arrears.

The Working Group has previously published<sup>5</sup> two key recommended milestones for 2021 relating to GBP loans:

- By end-Q1, cease initiation of new GBP LIBOR linked loans that expire after the end of 2021 ; and
- By end-Q3, complete active conversion of all legacy GBP LIBOR contracts expiring after end 2021 where viable.

It is recognised that the existence of a set of agreed conventions can provide confidence to market participants when negotiating new loans and transitioning legacy loans. The Loan Enablers Task Force on behalf of the Working Group has produced this Best Practice Guide to highlight key conventions and consolidates relevant information from previous Working Group publications to provide a single point of reference for best practice for GBP loans maturing after the end of 2021. It covers best practice in relation to conventions for new GBP SONIA referencing loans (including refinancing and renewals) and for the transition of legacy GBP LIBOR referencing loans, covering bilateral loans, syndicated loans and other loans where GBP LIBOR is a current option. This guide can be used by all loan market participants to further the adoption of SONIA in GBP loan markets and support firms in meeting the published Working Group milestones.

The recommended set of conventions listed in appendix 2 are a re-iteration of those previously published without any further change. For full details of all relevant material in respect of GBP SONIA loans please refer to the following publications:

- Statement on behalf of the Working Group on Sterling Risk Free Reference Rates – Recommendations for SONIA Loan Market Conventions (September 2020)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/statement-on-behalf-of-rfrwg-recommendations-for-sonia-loan-market-conventions.pdf>

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<sup>1</sup> The Bank of England and the Financial Conduct Authority (the “FCA”) are each ex-officio members of the Working Group. The views and outputs set out in this document do not constitute guidance or legal advice from the Bank of England (including the Prudential Regulation Authority (the “PRA”) or the FCA and are not necessarily endorsed by the Bank of England (including the PRA) or the FCA. This document is not intended to impose any legal or regulatory obligations on market participants. It does not constitute a comprehensive outline of all relevant considerations and is not a substitute for market participants’ own research and professional advice.

<sup>2</sup> <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr-terms-of-reference.pdf>

<sup>3</sup> <https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2020/may-2020.pdf>

<sup>4</sup> <https://www.bankofengland.co.uk/news/2021/january/the-final-countdown-completing-sterling-libor-transition-by-end-2021>

<sup>5</sup> <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/rfr-working-group-roadmap.pdf>

- SONIA loan conventions – supporting slides (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-supporting-slides.pdf>
- SONIA loan conventions – worked examples (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-worked-examples.xlsx>

*Please note that the supporting slides and worked examples were re-published by the Working Group in March 2021 with a clarifying amendment to make the documents more consistent with the September 2020 Recommendations for SONIA Loan Market Conventions. The clarifying amendment to the slides and worked examples is to ensure that the sum of the Non-Cumulative Compounded Rate daily interest amounts exactly equals the interest accrual produced if using the Cumulative Compound Rate calculation. The slides and worked examples now make it clear that, in order to achieve this, when using the Non-Cumulative Compounded Rate the interest payment amount should be rounded to 2 decimal places at the end of the period only.*

- Active transition of GBP LIBOR referencing loans (September 2020)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/active-transition-of-gbp-libor-referencing-loans.pdf>
- Credit adjustment spread methods for active transition of GBP LIBOR referencing loans (December 2020)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/credit-adjustment-spread-methods-for-active-transition-of-gbp-libor-referencing-loans.pdf>

## Section 1: Executive summary

1. The Working Group has set a number of target milestones in relation to GBP LIBOR referencing loans ahead of the expected cessation of publication of GBP LIBOR after end 2021 (see appendix 1). A key recommended milestone is that, from the end of March 2021, GBP LIBOR is no longer used in any new lending or other cash products that mature after the end of 2021. SONIA remains the Working Group's recommended alternative to GBP LIBOR, implemented via a compounded in arrears methodology, and loan markets should now move consistently towards this.
2. There have been a number of Working Group publications covering the recommended set of conventions (see appendix 2), guidance and timelines to support new loans referencing SONIA and the transition of legacy GBP LIBOR loans to SONIA. This guide aims to consolidate these previous publications into a single source and assist market participants on the identified consensus industry standards when initiating new SONIA loans, transitioning legacy loans or re-financing away from GBP LIBOR, in their efforts to meet the Working Group's key target milestones for cessation of new and transitioning of legacy loans within 2021.
3. This guide is expected to be particularly helpful for syndicated loans, where agreement from multiple parties is required, as well as for firms who are not members of the Working Group or who may be located outside of the UK and are less familiar with the materials that have been previously published.
4. Given the impending end-Q1 2021 milestone for the cessation of initiating new and refinanced loans linked to GBP LIBOR, market participants are encouraged to take urgent steps so that the Q1 milestone can be met. Market participants should not expect to rely on rate switch agreements or a pre-agreed process for renegotiation beyond the end-Q1 milestone for new GBP loans.
5. Market participants should review legacy GBP LIBOR documents. In order to amend legacy documentation, consent thresholds may need to be achieved, and so consultation with relevant borrower / lender / other parties should be undertaken to fulfil this contractual requirement. Where a party is not an institutional lender, it may be that they require further background in respect of the cessation of LIBOR.
6. Transition of legacy GBP LIBOR loans, including syndicated loans, should be completed, where viable, by end-Q3 2021. Progress on syndicated loans to date has been limited, but the confirmation of conventions to be used provided by this guide is expected to enable participants to start to engage in this process.
7. The Working Group's recommended set of conventions for SONIA loans were published in September 2020. The Working Group notes the urgent need for the adoption of SONIA in new GBP loans and the transition of legacy GBP LIBOR loans, and draws market participants' attention to the remarks of Edwin Schooling Latter, Director of Markets and Wholesale at the FCA, in his recent speech<sup>6</sup>:

*"Where parties can practicably agree to convert on the fair terms that have now become standard across derivatives, securities and loan markets, they should do so. The need to transition is clear. The economic terms of fair transition have been worked out, they stretch across markets and across jurisdictions. Fair spreads for conversion will be locked in when cessation and pre-cessation announcements are made. Press on with your transition". LIBOR – are you ready for life without LIBOR from end 2021?*

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<sup>6</sup> <https://www.fca.org.uk/news/speeches/libor-are-you-ready-life-without-libor-end-2021>

## Section 2: Bilateral Loans

### 2.1 New Loans

8. Since end-Q3 2020 lenders should have had the capability to offer non-LIBOR alternatives for borrowers requiring GBP loans. Any new or re-financed loans since Q3 2020 referencing LIBOR should contain clear contractual arrangements to facilitate conversion to SONIA or other alternative rates. Such contractual arrangements include incorporating pre-agreed conversion terms into the relevant documentation ('rate switch agreement'), or including a process for the renegotiation of LIBOR to non-LIBOR alternatives. The rate switch agreement is preferable in that it minimises the risk of unsuccessful negotiations at the relevant time.
9. From end-Q1 2021 lenders should cease the initiation of new GBP LIBOR-linked loans that expire after the end of 2021.
10. For new loans referencing SONIA compounded in arrears the Working Group has published a recommendation in respect of conventions to be used. The recommended set of conventions are intended to apply to all GBP loans, whether bilateral or syndicated, and originated in the UK or elsewhere. They are intended to assist market participants but it is recognised that parties can choose to agree variations to these conventions provided the intent of the milestones is met. The recommended set of conventions are re-iterated in appendix 2 of this guide, and more detailed information can be found in the relevant papers linked in the foreword.
11. A suite of SONIA loan documents aligned to the Working Group's recommended set of conventions outlined in this guide is available via the Loan Market Association website [Documents \(lma.eu.com\)](https://www.lma.eu.com). These documents may be available to borrowers either via legal counsel or relationship bank(s). While drafted for the syndicated loan market they could be adapted for bilateral loans.
12. Key points from the Working Group's recommendation are listed below. These should be considered alongside the more detailed recommendations contained in appendix 2 and the Technical and System Capability Guidance in appendix 3.

**SONIA:** Published by the Bank of England, SONIA remains the Working Group's recommended alternative to Sterling LIBOR, implemented via a daily compounded in arrears methodology.

**Margin:** Simple average of the margin, which is to be added after the rate compounding.

**Lookback:** Standard of 5 Banking Days lookback without observation shift is recommended, days can vary based on borrower / lender needs. Where there are linked hedging agreements, consideration should be given as to whether lookback period can be aligned. Note that it is necessary to ensure that the hedge continues to cover the relevant exposure.

**Observation shift:** Lookback with a Banking Day observation shift is a viable and robust alternative.

**Rounding:** 4 decimal places for SONIA, 2 decimal places for sterling value amounts.<sup>7</sup>

**Prepayments:** Proportional interest accrued on sums prepaid, which should be paid at the point of principal prepayment.

**Floors:** Where present, these should be applied on a daily basis.

**Compounded interest calculation on a SONIA Bilateral Loan:** As highlighted above, the recommended convention for sterling loans is SONIA implemented via compounded in arrears methodology. The approach for calculating cumulative compounded rate can be based on ISDA's formula for Compound RFR. This is known as the Cumulative Compounded Rate (CCR). Where daily accruals are required or fall to be determined, the Non-Cumulative Compounded Rate (NCCR) approach (which is derived from the CCR) may be an option. For bilateral SONIA loans, however, market participants may prefer to use the CCR approach alone to simplify implementation, drafting and reconciliation for borrowers who have no need for daily Non-Cumulative Compounded Rates.

To note, the sum of accrued NCCR-derived amounts should always equal the CCR-derived amount for the relevant period

<sup>7</sup> See appendix 3 of this guide for further details.

## 2.2 Legacy Loan Transition

13. When transitioning a legacy LIBOR bilateral loan to daily compounded SONIA, the Working Group has provided the below points for market participants to consider.

**Timing:** The Working Group's recommended milestone states that active transition of legacy loans should be completed where viable by end-Q3 2021. This means that contractual amendments should have been negotiated and signed by end-Q3. The change to the benchmark rate may occur later (on or before the first interest rate reset after LIBOR cessation).

**Replacement benchmark rate:** SONIA compounded in arrears is expected to be an appropriate replacement rate for c. 90% of loans by value.<sup>8</sup> It is expected that those 10% of loans by value which require alternative rates are constituted of lower value loans to smaller borrowers. Alternative rates include the Bank of England's bank rate ('Bank Rate', often referred to as 'base rate'), fixed rate and Term SONIA (for acceptable use cases).

**Effective date of benchmark rate change:** For agreement between the parties, but no later than the first interest rate reset date after LIBOR cessation.

**Credit Adjustment Spread (CAS):** The calculation for any CAS is for borrowers and lenders to determine. The Working Group does not make a recommendation but describes two possible methodologies in its recent paper<sup>9</sup>: the five-year historical median approach and the forward approach.

**Floors:** If a legacy loan has a LIBOR floor the equivalent floor is SONIA + CAS. Where the aggregate of SONIA + CAS is less than the legacy floor value, the Working Group's recommendation is for the CAS to remain unchanged, with SONIA adjusted to ensure that the aggregate of SONIA + CAS is equal to the legacy floor value. The continuation of legacy floors and their terms, including alternatives where the CAS is adjusted, are commercial matters for parties to agree.

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<sup>8</sup> <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/use-cases-of-benchmark-rates-compounded-in-arrears-term-rate-and-further-alternatives.pdf>

<sup>9</sup> <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/credit-adjustment-spread-methods-for-active-transition-of-gbp-libor-referencing-loans.pdf>

## Section 3: Syndicated Loans

### 3.1 New Loans

14. Since end-Q3 2020 lenders should have had the capability to offer non-LIBOR alternatives for borrowers requiring GBP loans. Any new or re-financed loans since Q3 2020 referencing LIBOR should contain clear contractual arrangements to facilitate conversion to SONIA or other alternative rates. Such contractual arrangements include incorporating pre-agreed conversion terms into the relevant documentation ('rate switch agreement'), or including a process for the renegotiation of LIBOR to non-LIBOR alternatives. The rate switch agreement is preferable in that it minimises the risk of unsuccessful negotiations at the relevant time.
15. From end-Q1 2021 lenders should cease the initiation of new GBP LIBOR-linked loans that expire after the end of 2021. This includes GBP LIBOR-linked loans with the rate switch agreement or pre-agreed process for renegotiation language.
16. For new loans referencing SONIA compounded in arrears, the Working Group has published a recommendation in respect of conventions to be used. The recommended set of conventions are intended to apply to all GBP loans, whether bilateral or syndicated, and originated in the UK or elsewhere. They are intended to assist market participants but it is recognised that parties can choose to agree variations to these conventions provided the intent of the milestones is met. The recommended set of conventions are re-iterated in appendix 2 of this guide, and more detailed information can be found in the relevant papers linked in the foreword.
17. The key focus for syndicates should be to minimise frictions caused by differences in practices and system capabilities across syndicate members. The conventions and information set out in this guide should be the starting position for this while noting practical limitations of current systems.
18. A suite of SONIA loan documents aligned to the Working Group's recommended set of conventions outlined in this guide is available via the Loan Market Association website [Documents \(lma.eu.com\)](https://www.lma.eu.com). These documents may be available to borrowers either via legal counsel or relationship bank(s).
19. Key points from the Working Group's recommendation are listed below. These should be considered alongside the more detailed recommendations contained in appendix 2 and the Technical and System Capability Guidance in appendix 3.

**SONIA:** Published by the Bank of England, SONIA remains the Working Group's recommended alternative to Sterling LIBOR, implemented via a daily compounded in arrears methodology.

**Margin:** Simple average of the margin, which is to be added after the rate compounding.

**Lookback:** Standard of 5 Banking Days lookback without observation shift is recommended, days can vary based on borrower / lender needs. Where there are linked hedging agreements, consideration should be given as to whether lookback period can be aligned. Note that it is necessary to ensure that the hedge continues to cover the relevant exposure.

**Observation shift:** Lookback with a Banking Day observation shift is a viable and robust alternative.

**Rounding:** 4 decimal places for SONIA, 2 decimal places for sterling value amounts.<sup>10</sup>

**Prepayments:** Proportional interest accrued on sums prepaid, which should be paid at the point of principal prepayment.

**Floors:** Where present, these should be applied on a daily basis.

**Settlement mechanics:** Syndicated SONIA transactions will settle with all Lenders of Record in an interest period on a Lender of Actual basis. As a consequence, Agents will calculate and allocate interest daily to all lenders enabling correct distributions / settlements on Interest Payment Dates. For this reason, market participants may prefer to use the Non-Cumulative Compounded Rate (NCCR) approach for Syndicated Loans.

<sup>10</sup> See appendix 3 of this guide for further details.

### **Compounded interest calculation on a SONIA Syndicated Loan:**

- As highlighted above, market participants may prefer to use the Non-Cumulative Compounded Rate (NCCR) approach for Syndicated Loans.
- NCCR is derived from the Cumulative Compounded Rate and essentially converts the rate into a daily effective rate to enable Agents to allocate accruals to individual lenders on a daily basis.
- To calculate a NCCR there are additional steps required in the application of the compounding formula:
  - Step 1: calculate the annualised compound rate – rounded per documentation
  - Step 2: unannualise the rate to cumulative compound rate - unrounded
  - Step 3: calculate the difference between today's unannualised rate and the preceding day's rate and derive an annualised rate for that day unrounded
  - Step 4: calculate the daily accrual for that day and pro rate to the lenders of record for that day.

To ensure that the sum of the NCCR daily amounts always equals the interest accrual produced if using the CCR calculation, the interest payment amount should be rounded to 2 decimal places at the end of the period only.

**Notices:** Timetables and no forward availability should be articulated

**Loan Trading:** When a Lender trades in to a facility their day one accrual rate is the compound rate that each existing lender in the transaction receives for that day. When a lender trades out, their accrual is capped at the point of exit and is not affected by any future change in rates.

**Delayed Compensation (Secondary Trading):** Seller to pay the Buyer the all-in rate.

**Cost of Carry (Secondary Trading):** Buyer to pay the Seller SONIA compounded in arrears plus CAS (if applicable).<sup>11</sup>

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<sup>11</sup> See Appendix 3 of this guide for further details

### 3.2 Legacy Loan Transition

20. When transitioning a legacy LIBOR syndicated loan to daily compounded SONIA, the Working Group has provided the below points for market participants to consider.

**Timing:** The Working Group recommends that active transition of legacy loans should be completed where viable by end-Q3 2021.

**Replacement benchmark rate:** SONIA compounded in arrears is expected to be an appropriate replacement rate for c. 90% of loans by value.<sup>12</sup> It is expected that those 10% of loans by value which require alternative rates are constituted of lower value loans to smaller borrowers. Alternative rates include Bank of England's bank rate ('Bank Rate', often referred to as 'base rate'), fixed rate and Term SONIA (for recommended use cases).

**Effective date of benchmark rate change:** For agreement between the parties, but no later than the first interest rate reset date after LIBOR cessation.

**Credit Adjustment Spread (CAS):** The calculation for any CAS is for borrowers and lenders to determine. The Working Group does not make a recommendation but describes two possible methodologies in its recent paper<sup>13</sup> – the five-year historical median approach and the forward approach.

**Floors:** If a legacy loan has a LIBOR floor the equivalent floor is SONIA + CAS. Where the aggregate of SONIA + CAS is less than the legacy floor value, the Working Group's recommendation is for the CAS to remain unchanged, with SONIA adjusted to ensure that the aggregate of SONIA + CAS is equal to the legacy floor value. The continuation of legacy floors and their terms, including alternatives where the CAS is adjusted, are commercial matters for parties to agree.

21. Guidance from the Working Group on roles for market participants includes:

#### **Borrower / Lender:**

- It is the borrower's / lender's responsibility to co-ordinate the transition from LIBOR.
- This may be led by the lead or co-ordinating Bank who initiated the original loan.
- Borrowers may, in some circumstances, approach the Agent with a transition proposal seeking consents from the lending syndicate.

#### **Agent:**

- Will play a key role in managing the amendment and consent process on behalf of the lending syndicate and finance parties once an approach has been defined.
- The amendment and consent process will require documented consent thresholds to be attained.
- An agent should remain independent and will not provide advice or guidance.
- Agents may initiate transition conversations via adopting a proactive approach or await lender or borrower driven proposals.
- Agents should engage any other finance parties (hedging banks, account banks etc.) in line with documentation provisions.

<sup>12</sup> <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/use-cases-of-benchmark-rates-compounded-in-arrears-term-rate-and-further-alternatives.pdf>

<sup>13</sup> <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/credit-adjustment-spread-methods-for-active-transition-of-gbp-libor-referencing-loans.pdf>

**Lead / Co-ordinating banks:**

- Complex transactions may require the assistance of lead banks or co-ordinating banks to deliver a smooth transition. Following the recommended conventions set out in this document may increase confidence in a consistent process.
- Consent from the borrower should be sought before the lending syndicate enters into discussions on the mechanism for active transition.

**Advisors / Sponsors:**

- Borrowers or lenders may choose to engage with advisors / sponsors or other connected parties through the transition process.
- Advisors should be aware of the recommendations from the Working Group and take these into account where possible.

#### Section 4: Other GBP Loans (e.g. GBP optional currency)

22. It is recognised that for both new origination documents and legacy transactions, documentation may include GBP as an optional currency or be drafted and have an agent based in jurisdictions outside of the UK. The cessation of GBP LIBOR necessitates the GBP elements of these facilities be amended, and it is the Working Group's view that the recommended set of conventions outlined in this guide apply to such loans.
23. The Working Group milestone requiring the cessation of new GBP LIBOR lending from end-Q1 2021 is intended to cover all loans, including those where GBP is an optional currency.
24. The Working Group recommends consistency of conventions across all currencies where possible.
25. Where GBP is not the base currency, borrowers risk facing a potential GBP draw stop event if documentation does not provide for alternative suitable benchmarks. Specific legal guidance should be sought on a case by case basis.

## Appendix 1: Key recommended milestones from the Working Group

### End-Q1 2021 targets:

- Cease initiation of new GBP LIBOR linked loans, bonds, securitisations and linear derivatives\* that expire after the end of 2021
- Complete identification of all legacy GBP LIBOR contracts expiring after end 2021 that can be actively converted, and accelerate active conversion where viable

\* Except for risk management of existing positions

### End-Q2 2021 target:

- Progress active conversion of all legacy GBP LIBOR contracts expiring after end 2021 where viable and, if not viable, ensure robust fallbacks are adopted where possible

### End-Q3 2021 target:

- Complete active conversion of all legacy GBP LIBOR contracts expiring after end 2021 where viable and, if not viable, ensure robust fallbacks are adopted where possible

### End-Q4 2021 target:

- Be fully prepared for the end of GBP LIBOR

## Appendix 2: Recommended conventions for loans referencing daily compounded SONIA

<b>SONIA</b>	<p>Sterling Overnight Index Average - the chosen risk-free rate for sterling markets administered by the Bank of England.</p>
<b>SONIA Compounded in Arrears</b>	<p>Calculated by compounding SONIA daily during the interest period. Whilst the market has shown a preference for compounding the rate rather than compounding the balance, several methods exist to calculate SONIA Compounded in arrears and implementation choice is left to individual market participants. To the extent compounding the rate is selected, the method for calculating the cumulative compounded rate should be based on ISDA's formula for Compound RFR.</p> <p>Given the need for the calculation of daily interest accruals to support distribution of interest impacted by intra-period activity such as prepayments and secondary trading, daily non-cumulative compounded rate ('NCCR') derived from the cumulative compounded rate may be an option.</p> <p>NCCR for a given day is the cumulative compounded rate for the prior day subtracted from the cumulative compounded rate for that given day.</p> <p><i>Please see associated spreadsheets with calculation methodologies to reconcile cumulative and non-cumulative compounded rates (link in section 1).</i></p>
<b>Holiday and weekend convention</b>	<p>Interest is compounded on banking days only; for each calendar day which is a weekend or holiday, the immediately preceding banking day's rate is applied, weighted by the number of calendar days until the next banking day.</p> <p>Holiday convention for SONIA follows London Bank Holidays. In multi-currency contracts, interest can be compounded on banking days for the drawn currency and ignore the banking/ non-banking days of other currencies.</p>
<b>Lookback</b>	<p>A Lookback period allows for payment certainty for borrowers when using an 'in arrears' rate. While a standard Lookback period of 5 Business Days is recommended, the Lookback period can vary based on borrower/lender needs. Where hedging contracts are used alongside facility documentation, consider co-ordination between these two types of documentation.</p> <p>Lookback without Observation Shift (also known as Lag) is recommended as the standard approach by the Working Group. Here, the SONIA rate is derived from the observation period but weighted according to the days in the interest period.</p> <p>A viable and robust alternative approach is a Lookback with Business Day Observation Shift. The Observation Shift approach is where each SONIA rate is weighted according to the days in the observation period (rather than the interest period). Note the compounded rate needs to be annualised and adjusted for the actual calendar days in the interest period.</p> <p><i>Please see associated materials for explanation of Lookback without Observation Shift or Lookback with Observation Shift (link in section 1).</i></p>
<b>Rounding</b>	<p>The Working Group's recommendation is for SONIA to be rounded (and not truncated) to 4 decimal places and sterling amounts be rounded to 2 decimal places.</p>

To ensure the total accrued interest amount calculated using the cumulative and non-cumulative compounded rate is always the same, the Working Group's recommendation is for:

- the cumulative compounded rate to be rounded on a daily basis (based on the number of decimal places stated in the credit agreement);
- the non-cumulative compounded rate derived from the daily cumulative compounded rate not to be rounded;
- the daily compounded RFR interest component calculated using the non-cumulative compounded rate not to be rounded (so that the total accrued interest calculated as the sum of these daily compounded RFR interest components does not carry forward rounded amounts); and
- the sterling amount of total accrued interest (i.e. compounded RFR component + margin + Credit Adjustment Spread (if applicable)), whether generated using the cumulative compounded rate or the sum of daily amounts calculated using the non-cumulative compounded rate, to be rounded to 2 decimal places.

#### **Day count**

The Working Group's recommendation is ACT/365 (fixed)

#### **Business day convention for payments**

The Working Group's recommendation is "Modified Following Business Day Convention."

This means payments of interest that would fall to be made on a day that is a non-Business Day are adjusted to the next succeeding Business Day, unless that Business Day falls in the next calendar month, in which case the interest payment date is the preceding Business Day.

#### **Timing**

SONIA for each London business day is published at 9.00 am the following London business day.

While the rate is subject to correction, the Lookback permits users to select the corrected rate were a correction to occur. The Working Group recommends that if a corrected rate is published, it is used in place of the original, uncorrected, rate.

#### **Margin Treatment**

The Working Group's recommendation is that margin should be added after rate compounding (i.e. margin is not compounded).

#### **Prepayments**

The Working Group's recommendation is for proportional accrued interest to be paid at the time of prepayment on any amounts of principal prepaid.

If principal is paid down without any accompanying interest being paid down at the same time, this can affect the accuracy of compounded calculations and be operationally complex.

#### **Floors**

Market participants are free to decide whether a floor is applied and at which level.

If an interest rate floor is included in a facility agreement, it is recommended that the floor be calculated daily (rather than at the end of an interest period) because loans accrue interest daily. The floor can then be applied to the applicable daily SONIA for the relevant interest period.

For legacy contracts containing a floor, where the aggregate of SONIA plus the credit adjustment spread is less than the legacy floor value, the Working Group's recommendation is for the credit adjustment spread to

remain unchanged, with SONIA adjusted to ensure that the aggregate of SONIA plus the credit adjustment spread is equal to the legacy floor value. However, the Working Group recognises that an alternative method, where the credit spread is adjusted, may be preferred by some market participants.

### **Distribution of interest**

The Working Group's recommendation is that the 'pro-rata' method of distributing interest across syndicated lenders is used.

This means interest paid by a borrower for a given day (business or otherwise) would be earned by a lender based on its pro-rata share of the principal amount of the loan owned for that day.

If a lender sells out of a loan completely, they are owed interest based on the time they held part of the loan but do not earn further interest after they leave, regardless of the fact that they will not be paid until the end of the interest period.

If a new lender buys into a loan during the interest period, their interest is calculated using the compounded rate as of that day in the interest period (and will not start to compound separately from the date they buy) i.e. non-cumulative compounded rate for that day can be used.

## **Secondary Market Conventions**

### **Delayed Compensation**

The Working Group's recommendation is for the Seller to pay the Buyer the all-in rate i.e. SONIA Compounded in arrears plus Margin.

For facilities where the all-in rate may also include a credit adjustment spread (whether by reason of transition or otherwise), the all-in rate would be SONIA Compounded in arrears plus credit adjustment spread plus Margin.

### **Cost of Carry**

The Working Group's recommendation on the cost of carry is for the Buyer to pay the Seller SONIA Compounded in arrears plus any credit adjustment spread, if applicable.<sup>14</sup>

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<sup>14</sup> See Appendix 3 of this guide for further details

## Appendix 3: Technical and System Capability Guidance

This appendix to the Best Practice Guide builds on the convention recommendations and relevant information from previous Working Group publications. It is intended to provide additional technical guidance and support for system implementation.

### A. Calculation Methodologies (Compounded-in-arrears)

#### Cumulative Compounded Rate (CCR)

The Cumulative Compounded Rate (CCR) calculates the compounded rate from the start of the interest period and can be applied cumulatively to each subsequent business day in the interest period up to and including to the final day in the period. It allows calculation of interest for the whole period using a single compounded rate.

The cumulative interest accruing for the interest period up until today can be calculated using that day's CCR by:

- **Product of**
  - Principal for that day
  - CCR for that day
  - No. of calendar days in the interest period to date

And

- **Divide by**
  - Year Basis (365 days for GBP)

Where needed, for example to post daily accruals to the general ledger, parties can calculate daily interest accruals by subtracting the previous business day's cumulative accrued interest from today's cumulative accrued interest.

Since this method calculates a single compounded rate from the beginning of the interest period, complexity may be added when supporting an intra period event, such as prepayments, if proportional accrued interest is not also prepaid as per the Working Group's recommendation, and for those firms involved in loan trading activity.

#### Non-Cumulative Compounded Rate (NCCR)

The Non-Cumulative Compounded Rate (NCCR) is a daily compounded rate derived from CCR i.e., CCR as of current day minus CCR as of the prior banking day. This generates a daily compounded rate which helps to easily calculate daily interest using compounded rate for that day or days (usually it will be for one day, but on Fridays it will be three days, or more if there are Bank holidays). This may be helpful for those market participants who need to regularly deal with mid-period events, such as frequent prepayments or loan trading.

In order to follow the Working Group's recommendations on rounding, the steps needed to calculate the NCCR are:

- Step 1: Calculate the annualised CCR, and round it as per the agreement
- Step 2: Calculate the unannualised CCR; do not round this figure
- Step 3: Calculate the unannualised NCCR which is the difference between the current day's unannualised CCR and the prior day's unannualised CCR, do not round this figure
- Step 4: Calculate the annualised NCCR, do not round this figure

To calculate daily interest using the unrounded NCCR:

- **Product of**
  - Principal for that day
  - Annualised NCCR for that day
  - No. of days for that day (usually it will be for one day, but on Fridays it will be three days, or more if there are Bank holidays)

And

- **Divide by**
  - Year Basis (365 days for GBP)

The daily interest amounts should not be rounded in order to ensure that the final interest accrual calculated by summing the (unrounded) daily accruals exactly equals the interest accrual produced if using the CCR at the end of the period.

Please note that the supporting slides and worked examples published in September 2020 have been updated in March 2021 to be consistent with this key principle.

Where firms need to distribute interest mid-period, the “crumbs” approach may be adopted as a suggested implementation approach. For further details, please see below.

#### Rounding considerations

Different parties’ systems may use different methods to compound. For example, they may use the CCR, NCCR or compound the balance depending on their needs or system capabilities. It is important for the accrued interest calculated at the end of the interest period to be the same using the different methods.

How to achieve this can vary depending on the rounding capability employed by different parties’ systems. One way to achieve this is to have no rounding during the calculation and only round the final total interest amount payable to 2 decimal places. This will ensure the final interest accruals calculated using any of the methods aligns.

Note that while any differences due to summing rounded daily NCCR interest amounts are expected to be immaterial (a matter of pence) the “crumbs” approach outlined below may be adopted to ensure that the interest amount at the end of the period using either CCR or NCCR will be exactly equal as required.

“Crumbs”. This may be necessary for firms or transactions with intra-period activity such as syndicated facilities with loan trading activity, where interest needs to be distributed mid-period and is a practical way to implement the rounding conventions suggested above.

In such a case, lending systems would be expected to display daily calculated RFR interest sums to 2 decimal places but carry the full unrounded calculations and add what is known as the “crumbs” (difference between total of daily accruals to 2 decimal places and full unrounded accruals) until the last day of accrual to ensure non-rounded NCCR calculations match a rounded CCR methodology.

#### Banking and Business Days

**Banking days** are used for sourcing risk-free rates based on the days in which the rates are published in the country of publication. This is to ensure all market participants consistently use all available published rates based on the banking day calendar in the country of publication.

**Business days** are used to determine the date for any payments to be made or timelines for the giving of notice and include additional business days based on the local business calendar for relevant/affected jurisdictions.

These definitions are important in order to avoid differences in interest amounts calculated by the different parties to a contract. In order to avoid differences parties must ensure that they use the exact same rate observations as published and weight these consistently for non-business days.

## Lookback Without vs With Observation Shift

Lookback Without Observation Shift (also known as Lag). This is recommended as the standard approach by the Working Group. Here, the SONIA rate is derived from the observation period but weighted according to the days in the interest period.

Please see associated materials for explanation of Lookback without Observation Shift:

- SONIA loan conventions – supporting slides (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-supporting-slides.pdf>
- SONIA loan conventions – worked examples (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-worked-examples.xlsx>

Where slide 6 illustrates how this approach is applied.

Where tab 1 demonstrates a worked example using this approach.

Lookback With Observation Shift. The Working Group considers this to be a viable and robust alternative approach. The Observation Shift approach is where each SONIA rate is weighted according to the days in the observation period (rather than the interest period).

This method introduces the potential for an additional complexity where the number of days in the observation period might differ from the number of days in the interest period, requiring the results to be adjusted for the number of days in the interest period. In certain rare but plausible circumstances this could result in a negative interest accrual being calculated.

Please see associated materials for explanation of Lookback with Observation Shift:

- SONIA loan conventions – supporting slides (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-supporting-slides.pdf>
- SONIA loan conventions – worked examples (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-worked-examples.xlsx>

Where tab 2 demonstrates a worked example using this approach.

## B. Floors

In order to allow for calculation of the compounded rate on a daily basis and also to allow the correct daily accrual to be calculated each day and posted to the general ledger for the daily accounting, where a floor is used, the Working Group recommends flooring the risk-free-rate daily before compounding (rather than at the end of the interest period).

Daily floors can be adopted in both the CCR and NCCR methods. For the NCCR method, a daily floor is the only compatible approach and is necessary to accurately distribute interest where mid-period events such as trading is needed. Where floors are applied, in order for the end of period interest amounts of the CCR and NCCR methods to continue to match, the risk-free-rate must be floored daily in both methods.

Flooring the risk-free-rate daily would also be required for those participants who may want to make use of a floored SONIA Index, were this to be made available for use.

Market participants are free to decide whether a floor is applied and at which level. Where a floor is used, the Working Group's recommendations and alternatives are set out below.

### Floor RFR Only

Where no CAS applies in the contract, the Working Group's recommended approach is that the daily applicable published risk-free rate is floored. The resulting floored rate is then compounded.

### Floor RFR + Credit Adjustment Spread (CAS)

Where a CAS is documented, parties may choose to floor the aggregate of the daily applicable published risk-free rate and CAS. The resulting floored rate is compounded. There are various approaches in the GBP loan market and three of these are set out below.

RFR Approach. This is the Working Group's recommended approach for legacy contracts. Where the aggregate of SONIA plus the CAS is less than the legacy floor value, the daily applicable published risk-free rate is adjusted so that the aggregate of daily applicable published risk-free rate and CAS is equal to the legacy floor value.

Hybrid Approach. This is an alternative approach, where if the daily applicable published risk-free rate is below the floor (e.g. negative), then the risk-free rate is set at the floor level (e.g. zero) and the CAS is adjusted to ensure that the aggregate of daily applicable published risk-free rate and CAS is equal to the floor. This approach may be helpful for those who have implemented compound the balance and those wanting to leverage a floored SONIA Index, were this to be made available for use.

CAS Approach. This is another alternative approach, where daily applicable published risk-free rate remains unchanged and the CAS is adjusted to ensure that the aggregate of daily applicable published risk-free rate and CAS is equal to the floor.

Further details can be found in the SONIA conventions papers:

- SONIA loan conventions – supporting slides (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-supporting-slides.pdf>
- SONIA loan conventions – worked examples (published September 2020; updated in March 2021)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/uk-loan-conventions-worked-examples.xlsx>

### Floor All-In rate

In this approach, the aggregate of daily applicable published risk-free rate, CAS and Margin is floored. The daily applicable published risk-free rate is adjusted to ensure the aggregate of daily applicable published risk-free rate, CAS and Margin equal to the floor. The CAS and Margin remain unchanged.

## C. Prepayments

The Working Group has recommended that the accrued interest on any principal prepaid is paid on the prepayment date. If interest is not paid as at the prepayment date, the calculation of the compounded rate may be complex.

### Non-Cumulative Compounded Rate

Since this is a daily compounded rate method, it is considered the best method to use in order to support the calculation of interest if there are prepayments. Compounding should end for the proportion of principal that is prepaid.

### Cumulative Compounded Rate

Interest on the prepaid principal should be calculated using the cumulative compounded rate as at prepayment date, and not the cumulative compounded rate as at the end of the interest period. Compounding should end for the proportion of principal that is prepaid. For example, if a £10m loan is drawn for 30 days and £4m is prepaid on day 17, interest on the prepaid principal should be calculated using the 16 days cumulative compounded rate, and for the remaining £6m principal, 30 days compounded rate should be used to calculate the interest amount.

In order to simplify prepayments when using CCR, parties may want to consider an approach where the loan is effectively split into different loans at the point of prepayment allowing each loan to have separate and distinct Cumulative Compounded Rates, accruals and payments.

#### *D. Credit Adjustment Spread (CAS) Automation for Operational Efficiency*

The concept of a CAS is commonly used as a method of mitigating, to the extent possible, any value transfer as contracts convert from GBP LIBOR to risk-free rates. In the GBP loan market a number of approaches have been taken to active transition and to calculating the applicable CAS. These include:

CAS negotiated per Currency and Tenor (specific to each deal) – Five Year Historical Median and Forward Approach

In this approach a fixed CAS is determined, typically at negotiation or on an agreed calculation date, for each currency and tenor allowed under an agreement. System capability to define this for each deal, and for the loan contract to automatically apply the relevant CAS based on currency, tenor, interest period and individual drawdown allowed under the loan agreement, is likely to be beneficial to improve operational efficiency and avoid unnecessary operational risk.

CAS determined at ISDA fallback trigger date and applied at, or at the start of the first interest period after, LIBOR's cessation or loss of representativeness – Five Year Historical Median Approach

In this approach CAS is determined at the ISDA fallback trigger date for each currency/ tenor and will subsequently remain unchanged. Such CAS may be applied to all loan contracts converting to RFR at, or at the start of the first interest period after, LIBOR's cessation or loss of representativeness (i.e. end of 2021 for GBP).<sup>15</sup> For those firms with a large number of applicable contracts, the ability for loan systems to automate this process and apply the relevant CAS to all relevant loan contracts may be beneficial to improve operational efficiency and reduce operational risk.

In some cases, parties may choose to use this CAS approach for contracts converting prior to LIBOR cessation date too, so it may be useful for loan systems to have the capability to administer this automatically.

For further considerations in respect of CAS approaches for active transition, please refer to the Working Group paper:

- Credit adjustment spread methods for active transition of GBP LIBOR referencing loans (December 2020)
  - <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/credit-adjustment-spread-methods-for-active-transition-of-gbp-libor-referencing-loans.pdf>

#### *E. Secondary Market Conventions - Cost of Carry*

The Working Group has recommended that, in relation to Cost of Carry, the Buyer should pay the Seller SONIA Compounded in arrears plus any credit adjustment spread (if applicable). It is recognised, however, that there may be practical constraints and systems limitations impacting secondary market participants' ability to readily calculate Cost of Carry between them and hence adopt the recommendation of SONIA Compounded in arrears.

The Working Group also understands that Cost of Carry is a discrete, niche aspect of the loan market, which is specific to secondary loan trades (and only then to delayed trades) and is generally only agreed between sophisticated trading counterparties. In light of the practical challenges highlighted, together with the inherent ability for counterparties to agree their preferred approach on a trade, the Working Group recognises and accepts that parties may choose to use a compounded SONIA index to implement the recommended approach, or to use daily simple SONIA as a practical alternative to SONIA Compounded in arrears for Cost of Carry.

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<sup>15</sup> <https://www.fca.org.uk/publication/documents/future-cessation-loss-representativeness-libor-benchmarks.pdf>

## F. Compounded SONIA-Based Indices

Compounded SONIA-based indices can be used to support the calculation and validation of overnight SONIA compounded in arrears in a wide range of financial products, including loans, through providing pre-calculated compound interest rate values for each business day.

In particular in the loan market, compounded SONIA-based indices complement freely available and independent 'long-form' RFR calculators<sup>16</sup> as a validation / reconciliation tool.

### What is a compounded SONIA-based index

An index can be a valuable tool to support the calculation and validation of compounded interest rates.

It simplifies and standardises the calculation of interest for some financial / loan contracts referencing SONIA by providing pre-calculated compound interest rate values for each business day. The index is essentially a data series that tracks the changes in rates from one publication point to the next factoring in set criteria. The SONIA compounded indices take the published non-compounded SONIA rates and compound these at each publication point. By applying a simple equation to the difference between two data points on the index it is possible to determine the compound rate between these points without the requirement to individually compound all component parts and applying the CCR formula (as defined above). The compound rate for the period between any two dates calculated using the index will be the same as that calculated by applying the CCR formula as long as the criteria are the same.

At the time of publication (July 2021), please note that loan contracts and many bank loan platforms do not typically calculate compound interest via published indices due to the range of variables within individual contracts. To the extent loan platforms and system vendors adapt to incorporate use of indices, loan contracts referencing indices may develop over time. However, it may be preferable for loan contracts to still reference long-form calculations as a fallback should indices no longer be available.

### Typical calculation methodologies

A compounded SONIA-based index is typically calculated as:

$$SONIA \text{ Compounded Index}_i = SONIA \text{ Compounded Index}_{i-1}^* \times \left(1 + \frac{SONIA_{i-1} \times a_{i-1}}{365}\right)$$

Where:

*SONIA Compounded Index<sub>i</sub>* = The index for date *i*, calculated and publishing on date *i*, rounded to 8 decimal places<sup>17</sup>

*SONIA Compounded Index<sup>\*</sup><sub>i-1</sub>* = The index for for business day *i-1*, calculated on business day *i*, rounded to 18 decimal places

*a<sub>i-1</sub>* = The number of calendar days for which SONIA <sub>*i-1*</sub> applies. This is equal to the number of calendar days between business day *i-1* and business day *i*

### Floored index

The typical calculation methodology for a floored index is as above, but with the added proviso that for an index with a floor, if the SONIA value on the relevant business day is below the floor value, then the floor value will be used within the index calculation instead of the actual SONIA value.

<sup>16</sup> The RFRWG has published a paper summarising the freely available independent RFR calculators in the market as at January 2021: <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/rfrwg-freely-available-calculator-summary.pdf>

<sup>17</sup> For the BoE's SONIA Compounded Index: (*SONIA Compounded Index<sub>i</sub>* = 100.00000000 published on 23 April 2018)

## Calculating compounded SONIA rates from an index

To calculate the compounded SONIA rate for any reference period, the compounded SONIA-based index values for the start and end date of the reference period are combined in the following formula:

$$\text{Compounded SONIA rate between } x \text{ and } y = \left( \frac{\text{SONIA Compounded Index}_y}{\text{SONIA Compounded Index}_x} - 1 \right) \times \frac{365}{d}$$

Where:

$x$  = start date of the reference period

$y$  = end date of the reference period

$d$  = the number of calendar days in the reference period

## Compounded SONIA-based indices that are available as at July 2021

As at the date of this publication, compounded SONIA-based indices are published by two providers.

Bank of England (“BoE”). Since 3 August 2020 the Bank of England (“BoE”) has been publishing<sup>18</sup> a single, freely available<sup>19</sup> SONIA Compounded Index.<sup>20</sup>

Some key usage criteria for the BOE SONIA Compounded Index are as follows:

- Started at 100 on 23<sup>rd</sup> April 2018 and is updated daily.
- While the published value is always rounded to 8 decimal places, the underlying calculation uses the previous day’s index value that has been rounded to 18 decimal places to maintain higher accuracy.
- It can be used as a reference for products or contracts using the compounded in arrears **with observation shift methodology** provided the correct dates are selected based on the length of the lookback.
- However, it can only be used as a reference for products or contracts using the compounded in arrears **without observation shift methodology (i.e. lag)** when the lookback is zero.
- Is only calculated and published on business days.

ICE Benchmark Administration (“IBA”). Six separate SONIA indices are published by IBA known as the ICE SONIA Indexes. They are available<sup>21</sup> from IBA for use in relation to financial contracts, pursuant to IBA’s Master Licence Agreement.<sup>22</sup> Each ICE SONIA Index supports different compound rate calculation criteria which can be summarised as follows:

Index	Floor	Lookback (business days)
Standard SONIA Index	none	none
With Zero (0%) floor	0%	none
With 2 day lookback	none	2
With 5 day lookback	none	5
With Zero (0%) floor and 2 day lookback	0%	2
With Zero (0%) floor and 5 day lookback	0%	5

Some key usage criteria for the ICE SONIA Indexes are as follows.

- The ICE Standard SONIA Index:
  - o Replicates the BoE’s SONIA Compounded Index and has no floor and no business day lookback.
- The ICE SONIA Index with Lookback:

<sup>18</sup> [Supporting Risk-Free Rate transition through the provision of compounded SONIA](#)

<sup>19</sup> Each day’s SONIA Compounded Index will be made freely available on the BoE’s Interactive Statistical Database by 10:00 on the business day after it is first published.

<sup>20</sup> [Bank of England | Database](#)

<sup>21</sup> [https://www.theice.com/publicdocs/ICE\\_SONIA\\_Indexes\\_Methodology.pdf](https://www.theice.com/publicdocs/ICE_SONIA_Indexes_Methodology.pdf)

<sup>22</sup> <https://www.theice.com/iba/sonia-indexes>

- Can be used for products or contracts using SONIA compounded in arrears **without observation shift methodology (i.e. lag)** as recommended<sup>23</sup> for the UK loan market.
- Are published using the two most frequently used lookback periods, of 2 business days and 5 business days, corresponding to typical payment clearing time scales.
- The ICE SONIA Index with a 0% Floor:
  - Can be used for products or contracts where the daily SONIA rate is floored at 0%.
  - Is calculated using a minimum interest rate of 0%. If the daily SONIA value falls below 0% then this index is calculated using 0% instead of the actual SONIA value. In this case on each day that SONIA rates are negative the Index value does not change.
  - Can only be used when daily SONIA rates are floored at 0% i.e. “daily floors” and cannot be used with period or average floors.
  - Can be used in products or contracts without a CAS. Where a CAS is documented, parties may choose to floor the aggregate of the daily SONIA rate and CAS and in this case this Index can only be utilised if the Hybrid Approach<sup>24</sup> has been implemented and documented.
- The ICE SONIA Indexes:
  - Are calculated for non-business days using the relevant SONIA value (depending on lookback or floor criteria) from the preceding business day and are published on the business day that follows this non-business day.
  - While the published value is always rounded to 8 decimal places, the underlying calculation uses the previous day’s index value that has been rounded to 18 decimal places.

Other compounded SONIA-based indices might become available in future.

#### Use cases of compounded SONIA-based indices

To the extent that parties choose to use indices, such users of indices are encouraged to select an index that is suitable for their specific loan parameters.

In the right circumstances, the available suite of indices gives borrowers and investors the opportunity to calculate and validate compounded rates and may be a useful tool for this purpose. Utilising an index for this purpose is most useful when validating the cumulative compound rate (CCR) for an interest period, either to date or for the full period.

The currently available published indices cannot usually be used to calculate a daily NCCR per the published SONIA loan market conventions and LMA drafting (which is based on the SONIA loan market conventions). This is due to the use in these conventions of a rounded CCR as calculation input. Should the CCR rounding (per the agreement) be less than 12 decimal places (or practically unrounded), then this is inconsistent with the Index rounded to 18 decimal places (or practically unrounded).

Hence, use of the existing indices are likely to be of more value for loans where frequent intra-period events are not expected.

Users should also consider the use of indices in the context of currencies being utilised under the loan (as suitable indices may not necessarily be available in other currencies). To the extent an index is used to validate or reconcile compounded rates, it is critical to ensure the parameters of the index selected exactly match the underlying long-form calculation of compounded rates in any loan documentation.

<sup>23</sup> <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/statement-on-behalf-of-rfrwg-recommendations-for-sonia-loan-market-conventions.pdf>

<sup>24</sup> See Appendix 3B (Floors) of this guide for further details

Illustrative worked example using the BoE's SONIA Compounded Index – Calculating compounded SONIA rates and interest due

In this example, using the BoE's SONIA Compounded Index, and assuming no Lookback, interest on an advance from drawdown on 30<sup>th</sup> April 2021 to repayment on 28<sup>th</sup> May 2021 is calculated as follows:

Date	SONIA Compounded Index
02 Jun 21	101.34331802
01 Jun 21	101.34317974
28 May 21	101.34260667
27 May 21	101.34246757
26 May 21	101.34232875
25 May 21	101.34219103
24 May 21	101.34205304
21 May 21	101.34164073
20 May 21	101.34150385
19 May 21	101.34136780
18 May 21	101.34123092
17 May 21	101.34109682
14 May 21	101.34068285
13 May 21	101.34054569
12 May 21	101.34040909
11 May 21	101.34027360
10 May 21	101.34013756
07 May 21	101.33972276
06 May 21	101.33958643
05 May 21	101.33945122
04 May 21	101.33931351
30 Apr 21	101.33874824
29 Apr 21	101.33860969

Source: Bank of England

Where:

$$x = 30^{\text{th}} \text{ April } 2021$$

$$y = 28^{\text{th}} \text{ May } 2021$$

$$d = 28$$

$$\text{Compounded SONIA rate between } x \text{ and } y = \left( \frac{\text{SONIA Compounded Index}_y}{\text{SONIA Compounded Index}_x} - 1 \right) \times \frac{365}{d}$$

$$\text{Compounded SONIA rate between 30th April 2021 and 28th May 2021} = \left( \frac{101.34260667}{101.33874824} - 1 \right) \times \frac{365}{28}$$

$$\text{Compounded SONIA rate between 30th April 2021 and 28th May 2021} = 0.049633\% \text{ (6 dp)}$$

Interest amounts due on the SONIA based loan are calculated as follows:

- 1 - Use the index to calculate the annualised interest rate (b)
- 2 - Round the calculated rate to the precision specified in the loan contract
- 3 - Add any applicable CAS (c)
- 4 – Add any specified spread / margin (d)

5 - Use the rounded interest rate, spread / margin and CAS to calculate interest due via simple interest calculation

Notional Value (a) × (SONIA Compounded (b) + CAS (b) + Margin (c)) / 365 days × length of advance (e)

<b>Notional Loan Value</b>	(a)	£10,000,000
<b>SONIA Compounded Rate</b>	(b)	0.049633%
<b>Credit Adjustment Spread (1m 5YHM)</b>	(c)	0.032600%
<b>Margin</b>	(d)	2.00%
<b>Number of Days</b>	(e)	28
<b>Interest Due</b>	=a*(b+c+d)/365*e	£15,973.29

Illustrative worked example using ICE Risk Free Rates (RFR) Calculator– Calculating compounded SONIA rates and interest due

ICE Benchmark Administration is one of several providers of freely available independent RFR calculators.<sup>25</sup> Used correctly, these calculators should replicate compounded SONIA rates and interest due that have been calculated using compounded SONIA-based indices. In this example, using the ICE Risk Free Rates (RFR) Calculator, and assuming no Lookback, interest on an advance from drawdown on 30th April 2021 to repayment on 28th May 2021 is calculated as follows:

### ICE Risk Free Rates (RFR) Calculator

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<b>Overnight Index</b> SONIA	<b>Notional</b> £10,000,000	<b>Rounding (d.p.)</b> 6
<b>Start Date / (case sensitive)</b> 30-Apr-2021	<b>End Date / (case sensitive)</b> 28-May-2021	
<b>Effective Start Date (Mod Following)</b> 30-Apr-2021	<b>Effective End Date (Mod Following)</b> 28-May-2021	
<b>Reference Lag (business days)</b> 0	<b>Spread (%)</b> 2.0326	<b>Day Count Convention</b> ACT/365
<b>Compounding Method</b> COMPOUNDING		

Calculate    Reset

Annualized Overnight Interest Rate (Excluding Spread)	0.049633%	Interest Amount (Including Spread)	£15,973.29
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Source: ICE Benchmark Administration

<sup>25</sup> See Footnote 16 above