

Prospectus Supplement To The Short Form Base Shelf Prospectus dated January 30, 2018.

No securities regulatory authority has expressed an opinion about these securities and it is an offence to claim otherwise.

This prospectus supplement together with the short form base shelf prospectus dated January 30, 2018 to which it relates, as amended or supplemented, and each document incorporated by reference into such prospectus, constitutes a public offering of these securities only in those jurisdictions where they may be lawfully offered for sale and therein only by persons permitted to sell such securities.

The securities to be issued hereunder have not been, and will not be, registered under the United States Securities Act of 1933, as amended and, subject to certain exceptions, may not be offered, sold or delivered, directly or indirectly, in the United States of America or for the account or benefit of U.S. persons. See "Plan of Distribution".

New Issue

January 30, 2018



**Royal Bank of Canada
\$7,000,000,000**

Senior Note Program

We may at various times during the 25 month period that our short form base shelf prospectus dated January 30, 2018 (the "**base shelf prospectus**") remains valid, offer Senior Debt Securities, as defined in the base shelf prospectus, constituting unsubordinated indebtedness (each a "**Security**" and collectively, the "**Securities**" for the purpose of this program supplement and applicable product and pricing supplements only and not for the purpose of the base shelf prospectus) in an aggregate amount of up to \$7,000,000,000 (or the equivalent in non-Canadian currencies or currency units) calculated on the basis of the principal amount of Securities issued, in the case of interest-bearing Securities, or on the basis of the gross proceeds received by us, in the case of non-interest bearing Securities or Securities bearing interest at a rate that at the time of issue is below market rates. The Securities will be our direct unsecured obligations which, if we become insolvent or are wound up, will rank equally with our other unsubordinated indebtedness, including deposit liabilities, other than certain governmental claims in accordance with applicable law.

The Securities are not fixed income securities and are not designed to be alternatives to fixed income or money market instruments. The Securities are structured products that possess downside risk.

The Securities will not be deposits insured under the *Canada Deposit Insurance Corporation Act* (the "CDIC Act**").**

The offering of the Securities hereunder will be made pursuant to a senior note program (the "**Senior Note Program**") described in this prospectus supplement (the "**program supplement**"). The specific terms of the Securities, which will be established at the time of the offering and sale of the Securities, will be set out in one or more prospectus supplements and pricing supplements delivered, together with our base shelf prospectus and this program supplement, to purchasers of the Securities. The aggregate amount of the Securities that may be offered may be subject to reduction as a result of the sale by us of other securities pursuant to one or more other prospectus supplements under the base shelf prospectus.

The Securities will be offered severally by one or more of RBC Dominion Securities Inc. ("**RBC DS**") and Desjardins Securities Inc., Laurentian Bank Securities Inc., National Bank Financial Inc., Raymond James Ltd., Richardson GMP Limited and other dealers that may be appointed from time to time (collectively, the "**Dealers**"). Under a dealer agreement dated January 30, 2018, as may be amended from time to time, between us and the Dealers, the Securities may be purchased or offered at various times by any of the Dealers, as agent, underwriter or principal, at prices and commissions to be agreed upon, for sale to the public at prices to be negotiated with purchasers. Sale prices may vary during the distribution period and as between purchasers. We may also offer the Securities to purchasers directly, pursuant to applicable law, at prices and on terms to be negotiated. The applicable pricing supplement will identify each Dealer engaged in connection with the offering and sale of any Securities, and will also set forth the terms of the offering of such Securities including the net proceeds to us and, to the extent applicable, any fees payable to the Dealers. RBC DS will be involved in the decision to distribute Securities hereunder and in the determination of the terms of each particular offering of Securities. **RBC DS is our wholly owned subsidiary. Consequently, we are a related and connected issuer of RBC DS within the meaning of applicable securities legislation.** See "Plan of Distribution" in this program supplement.

In compliance with applicable Canadian securities laws, we have filed an undertaking with the securities regulators in each province and territory of Canada that we will not distribute any Securities that are considered novel specified derivatives (as such terms are defined under applicable Canadian securities laws) at the time of distribution without preclearing with such securities regulators the disclosure contained in the prospectus supplements or pricing supplements pertaining to such Securities in accordance with Canadian securities laws.

The offering of Securities is subject to approval of certain legal matters on our behalf by Davies Ward Phillips & Vineberg LLP and on behalf of the Dealers by McMillan LLP.

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Prospectus for Securities

Securities issued under our Senior Note Program will be described in four separate documents: (1) the base shelf prospectus, (2) this program supplement, (3) a prospectus supplement which generally describes a particular type of Securities we may issue under our Senior Note Program (a "**product supplement**"), and (4) a prospectus supplement that contains the specific terms (including pricing information) about the Securities being offered (a "**pricing supplement**"). In respect of any particular Securities we may offer under our Senior Note Program, the base shelf prospectus and the program supplement together with the applicable product supplement and pricing supplement will collectively constitute the "**prospectus**" for such Securities. Since the specific terms of Securities that we may offer may differ from the general information provided in the base shelf prospectus and this program supplement, in all cases you should rely on the information in the applicable product supplement and pricing supplement where it differs from that in the base shelf prospectus or this program supplement and should rely on the information in the applicable pricing supplement where it differs from that in the applicable product supplement.

Unless otherwise specified, in this program supplement and in each product supplement and pricing supplement relating to Securities issued under our Senior Note Program:

- all dollar amounts are expressed in Canadian dollars;
- "the Bank", "we", "us" and "our" mean Royal Bank of Canada together, where the context requires, with its subsidiaries;
- "you", "your" and "holder" means a prospective purchaser or a purchaser of Securities, or a beneficial or registered holder of Securities, provided that a reference to "registered holder" means a registered holder of Securities (see "Book-Entry-Only Securities" in the base shelf prospectus and "Global Securities" and "Legal Ownership" under the heading "Description of the Securities" in this program supplement); and
- "Business Day" means any day which is not a Saturday, Sunday or a day on which banking institutions are authorized or required by law or regulation to be closed in the city of Toronto, Ontario.

Documents Incorporated by Reference

This program supplement is deemed to be incorporated by reference into the base shelf prospectus solely for the purpose of our Senior Note Program and the Securities issued hereunder. Other documents are also incorporated or deemed to be incorporated by reference into the base shelf prospectus and reference should be made to the base shelf prospectus for full particulars.

Any statement contained in a document incorporated or deemed to be incorporated by reference in the base shelf prospectus or this program supplement is deemed to be modified or superseded, for purposes of this program supplement, to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference in the base shelf prospectus or this program supplement modifies or supersedes such statement. The modifying or superseding statement need not state that it has modified or superseded a prior statement or include any other information set forth in the document that it modifies or supersedes. The making of a modifying or superseding statement will not be deemed an admission for any purposes that the modified or superseded statement, when made, constituted a misrepresentation, an untrue statement of material fact or an omission to state a material fact that was required to be stated or that was necessary to make a statement not misleading in light of the circumstances in which it was made. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this program supplement or the prospectus.

Caution Regarding Forward-Looking Statements

See "Caution Regarding Forward-Looking Statements" in the applicable pricing supplement for any Securities offered.

Use of Proceeds

The Securities will be sold in the normal course of our business and the net proceeds used for general banking purposes.

Description of the Securities

General

The Securities will be limited to an aggregate offering price of \$7,000,000,000 or, at our option if so specified in the relevant product supplement or pricing supplement, the equivalent of this amount in any currency or currency unit other than Canadian dollars. This aggregate offering price is subject to reduction as a result of the sale by us of other securities pursuant to another prospectus supplement to the accompanying base shelf prospectus.

Securities may be issued at various times and in different series, any series of which may comprise one or more tranches of Securities. We may issue as many distinct series of Securities as we wish.

Securities will be our direct unsecured obligations constituting unsubordinated indebtedness, ranking equally and rateably with all of our other unsecured and unsubordinated indebtedness, including deposit liabilities, other than certain governmental claims in accordance with applicable law. The Securities will not be deposits insured under the CDIC Act.

Subject to regulatory capital requirements applicable to the Bank, there is no limit on the amount of indebtedness that we may issue. We have other unsubordinated debt outstanding and may issue additional unsubordinated debt at any time and without notifying you.

We will offer Securities under our Senior Note Program on a continuous basis through one or more Dealers. See "Plan of Distribution".

Fiscal Agency, Calculation Agency and Fundserv Depository Agreement

Unless otherwise specified in the applicable product supplement or pricing supplement relating to specific Securities to be offered and sold, Securities will be issued pursuant to and have the benefit of an amended and restated fiscal agency, calculation agency and Fundserv depository agreement, dated April 28, 2017, as may be further amended or supplemented from time to time, between us and RBC DS (the "**Fiscal Agency, Calculation Agency and Fundserv Depository Agreement**"). RBC DS, our wholly-owned subsidiary, has been appointed as the registrar, transfer agent and fiscal agent (the "**Fiscal Agent**"), as the calculation agent (the "**Calculation Agent**"), and, in respect of the Fundserv Securities (as defined under "– Global Securities") only, as book-entry-only depository and registered holder (the "**Fundserv Depository**") under such agreement. We may from time to time, without the consent of holders of Securities, appoint a Fiscal Agent, Calculation Agent, and/or Fundserv Depository other than or in addition to RBC DS in respect of any particular series of Securities. If not RBC DS, the applicable pricing supplement will identify the Fiscal Agent and Calculation Agent and, in respect of the Fundserv Securities, the Fundserv Depository.

Among other things, the Fiscal Agency, Calculation Agency and Fundserv Depository Agreement sets out the procedures to be followed in connection with the calculation of amounts payable in respect of the Securities (see "– Calculation Agent" below), the payment by us of amounts in respect of the Securities, notification to holders (see "– Notification to Holders" below), the holding of securityholder meetings, the obligations of RBC DS in its capacity as the Fundserv Depository and other administrative matters in respect of the Securities.

A copy of the Fiscal Agency, Calculation Agency and Fundserv Depository Agreement is available at www.sedar.com.

Global Securities

Unless otherwise specified in a product supplement or pricing supplement, (i) each Security issued under our Senior Note Program will be issued as a book-entry-only security in fully registered form and will be represented by a global security (each a "**Global Security**" and collectively, the "**Global Securities**") that we deposit with and register in the name of a financial institution or its nominee called a depository, and (ii) either (a) the Fundserv Depository, or its nominee, will be the depository for all Securities in global form that are traded through the Fundserv (as defined under "– Secondary Market For Securities – Fundserv") network ("**Fundserv Securities**"), or (b) CDS Clearing and Depository Services Inc. ("**CDS**"), or its nominee, will be the depository for all Securities in global form that are traded over-the-counter and must be purchased, transferred or redeemed through financial institutions that participate in the depository service of CDS ("**OTC Securities**"). The Global Security may also be held by the Bank in its capacity as domestic custodian for the depository. Except as

discussed in the accompanying base shelf prospectus under "Book-Entry-Only Securities", in the case of OTC Securities, or below under "– Legal Ownership – Book-Entry-Only Fundserv Securities", in the case of Fundserv Securities, owners of beneficial interests in book-entry-only securities will not be entitled to physical delivery of Securities in certificated form. We will make payments of all amounts payable by us on the Securities to the depository. A Global Security may not be transferred to the name of any other direct or beneficial holder except in the special circumstances described in the base shelf prospectus under "Book-Entry-Only Securities", in the case of OTC Securities, or below under "– Legal Ownership – Book-Entry-Only Fundserv Securities", in the case of Fundserv Securities.

Legal Ownership

Street Name and Other Indirect Holders

Investors who hold their Securities in accounts at banks or with brokers will generally not be recognized by us as legal holders of Securities. This is called holding in street name. Instead, we recognize only the bank or broker, or the financial institution the bank or broker uses to hold its Securities. These intermediary banks, brokers and other financial institutions pass along payments made on the Securities, either because they agree to do so in their customer agreements or because they are legally required to do so. If you hold your Securities in street name, you should check with your own institution to find out:

- how it handles payments and notices in respect of the Securities;
- whether it imposes fees or charges;
- how it handles voting if it is ever required to do so; and
- how it pursues rights under the Securities if there is a default or other event triggering the need for holders to act to protect their interests.

Direct Holders

Our obligations (as well as the obligations of the Fiscal Agent and those of any third parties employed by us or the Fiscal Agent) under the Securities run only to persons who are registered holders of Securities. As noted above, we do not have direct obligations to you if you hold in street name or other indirect means because your Securities are issued in the form of Global Securities as described above. For example, once we make a payment to the registered holder we have no further responsibility for that payment even if that registered holder is legally required to pass the payment along to you as a street name customer but does not do so.

Book-Entry-Only Fundserv Securities

Unless otherwise specified in a product supplement or pricing supplement, Fundserv Securities will be issued through the "book-entry-only system" and must be purchased, transferred or redeemed through RBC DS or using the Fundserv network (see "– Transfers of Fundserv Securities" below). Fundserv Securities will be registered in the name of RBC DS (in its capacity as the Fundserv Depository) or its nominee, as the case may be, which will hold such Fundserv Securities as depository on behalf of the registered dealers through whom the Fundserv Securities are purchased (i.e., the members of RBC DS' distribution network that participate in the offering as "selling firms" and not as dealers under the base shelf prospectus). RBC DS or one of its affiliates will maintain a record of all of the beneficial owners of Fundserv Securities.

Except as described below, a purchaser acquiring a beneficial interest in Fundserv Securities will not be entitled to a certificate or other instrument from the Bank, any trustee or the Fundserv Depository evidencing that purchaser's interest therein, and such purchaser will not be shown as the registered holder of Fundserv Securities on the records maintained by the Fundserv Depository. Each such purchaser of Fundserv Securities will receive a customer confirmation of purchase from the registered dealer through whom the Fundserv Securities are purchased in accordance with the practices and procedures of that registered dealer.

As long as the Fundserv Securities are held in the book-entry-only system maintained by RBC DS, the Bank will recognize only RBC DS as the holder of the Fundserv Securities and the Bank will make all payments on the Fundserv Securities to RBC DS. RBC DS will in turn make payments to beneficial owners, by distributing such payments through the Fundserv

network. The Bank understands that RBC DS does so under agreements it has made with the registered dealers through whom the Fundserv Securities are purchased; RBC DS is not obligated to do so under the terms of Fundserv Securities.

Under this arrangement and pursuant to the *Securities Transfer Act, 2006* (Ontario) (the "STA"), investors will not own Fundserv Securities directly. Instead, they will own beneficial interests in the Fundserv Securities, through RBC DS and, if applicable, any other registered dealer through whom the Fundserv Securities are purchased. As long as the Fundserv Securities are held in the book-entry-only system, investors will be indirect owners, and not registered holders, of Fundserv Securities. Under the STA, RBC DS has the rights and obligations of a securities intermediary *vis-à-vis* any investors who purchase their beneficial interests from RBC DS. As such, Fundserv Securities are held for the benefit of investors, are not the property of RBC DS and are not subject to the claims of creditors of RBC DS.

Neither the Bank nor the Dealers (other than RBC DS) will assume any liability for: (a) any aspect of the records relating to the beneficial ownership of Fundserv Securities held by the Fundserv Depository or the payments or deliveries relating thereto; (b) maintaining, supervising or reviewing any records relating to Fundserv Securities; or (c) any advice or representation made by or with respect to a depository, including those contained in the base shelf prospectus, this program supplement, a product supplement or a pricing supplement, relating to the rules governing the Fundserv Depository or any action to be taken by the Fundserv Depository or at the direction of the selling firms. The Fundserv Depository acts as the agent and depository for the selling firms, who in turn are agents for the beneficial owners. As a result, for payment or deliveries made by or on behalf of the Bank to the Fundserv Depository in respect of Fundserv Securities, the beneficial owners of Fundserv Securities must look solely to the selling firms, who in turn will look to the Fundserv Depository for such payment or deliveries.

As indirect holders of Fundserv Securities, investors should be aware that, except in the circumstances described below, they: (a) may not have Fundserv Securities registered in their name; (b) may not have physical certificates representing their interest in Fundserv Securities; (c) may not be able to sell Fundserv Securities to institutions required by law to hold physical certificates for securities they own; and (d) may be unable to pledge Fundserv Securities as security.

Fundserv Securities in fully registered and certificated form will be issued to beneficial owners of Fundserv Securities only if: (i) required by applicable law; (ii) RBC DS' book-entry-only system ceases to exist; (iii) the Bank or RBC DS advises that RBC DS is no longer willing or able to properly discharge its responsibilities as Fundserv Depository and the Bank is unable to locate a qualified successor; (iv) the Bank, at its option, decides to terminate its present arrangements with RBC DS; (v) if an event of default has occurred with regard to Fundserv Securities and has not been cured or waived; or (vi) as otherwise agreed by the Bank and RBC DS.

If Fundserv Securities are issued in fully registered and certificated form in the circumstances described above, any amount due at maturity will be paid upon surrender thereof at any branch of the Bank in Canada.

Transfers of Fundserv Securities

Transfers of ownership of Fundserv Securities will be effected only through records maintained by RBC DS or one of its affiliates, as the case may be, with respect to interests of the beneficial owners. If you hold Fundserv Securities and desire to purchase, sell or otherwise transfer ownership of or other interests in Fundserv Securities, you may do so only through RBC DS or by using the Fundserv network. See "– Fundserv" below.

Your ability to pledge Fundserv Securities or otherwise take action with respect to your interest in Fundserv Securities (other than through RBC DS or by using the Fundserv network) may be limited due to the lack of a physical certificate.

Types of Securities

Among other types of Securities, we may issue the following types of Securities under our Senior Note Program:

- ***Linked Securities.*** A Security of this type provides that the principal amount and/or the amount of interest, if any, payable on an interest payment date or at maturity, will be determined by reference to one or more underlying interests, including but not limited to any one or more of the following underlying interests:
 - one or more securities or mutual funds;
 - one or more currencies;

- one or more commodities;
- one or more debt or debt-like instruments;
- one or more models or formulae;
- any other financial, economic or other measures or instruments, including the occurrence or non-occurrence of any event or circumstance;
- one or more indices; or
- baskets or combinations of any of the foregoing.

If you are a holder of a linked Security, you may receive an amount at maturity that is greater than or less than the face amount of your Security depending upon the value, level or price at maturity of the underlying interests to which return or interest payable on your Securities is linked. That value, level or price may fluctuate over the term of the Securities. If you purchase a linked Security, your product supplement together with a pricing supplement will include information about the relevant underlying interests and how amounts that are to become payable will be determined by reference to such underlying interests. In addition, your product supplement together with a pricing supplement will specify whether your Security will be exchangeable for cash, securities of an issuer other than the Bank or other property.

Linked Securities carry significant risks not associated with conventional fixed rate or floating rate debt securities. These risks include the possibility that a holder may receive little or virtually no principal and no interest or other return or may receive payments earlier or later than expected. You should not invest in linked Securities if you do not understand the risks associated with structured products or derivatives. **Before you purchase any linked Security, you should read carefully the "Risk Factors" in each of the base shelf prospectus and the applicable product supplement and pricing supplement for such linked Securities.**

- ***Fixed Rate Securities.*** A Security of this type will bear interest at a fixed rate described in the applicable product supplement together with a pricing supplement. This type includes zero-coupon Securities, which bear no interest and are instead issued at a price lower than the principal amount.
- ***Floating Rate Securities.*** A Security of this type will bear interest at rates that are determined by reference to an interest rate formula. In some cases, the rates may also be adjusted by adding or subtracting a spread or multiplying by a spread multiplier and may be subject to a minimum rate or a maximum rate. If your Security is a floating rate Security, the interest rate formula and any adjustments that apply to the interest rate will be specified in your product supplement together with a pricing supplement.

Information in the Product Supplements and Pricing Supplements

A product supplement together with a pricing supplement will describe the specific terms of any offered Securities, including:

- the branch, if any, through which we are issuing the Securities;
- the specific designation of the offered Securities;
- any limit on the aggregate principal amount of the offered Securities;
- the stated maturity of the offered Securities;
- the price at which the offered Securities will be sold, or how the price will be determined if Securities are offered on a non-fixed price basis, and the amount payable upon maturity of the Securities;
- whether the Securities are linked Securities, fixed rate Securities or floating rate Securities;

- when and how the principal (including any partial principal repayments) and any premium or interest on the offered Securities will be payable and how each of the principal and any premium or interest on the Securities will be calculated;
- any minimum amount or portion of the principal of the Securities that is "protected" or that we agree to repay;
- any risk factors in addition to those described in the base shelf prospectus that should be considered before you decide whether to purchase the Securities;
- any special rights of the holders of the Securities upon the occurrence of specified events;
- any of our additional obligations with respect to the particular Securities offered or any changes to our obligations from the obligations described in the base shelf prospectus or this program supplement;
- whether the Securities described therein will be qualified investments for trusts governed by registered retirement savings plans, registered retirement income funds, registered education savings plans, registered disability savings plans, deferred profit sharing plans and tax-free savings accounts, each within the meaning of the *Income Tax Act* (Canada);
- certain other Canadian income tax considerations that may apply to specified investors in the Securities;
- whether the Securities will be listed on a stock exchange or traded through a distributor on the Fundserv network or another quotation system; and
- any other terms of the Securities that pertain specifically to such Securities.

We may set forth in a product supplement or pricing supplement variable terms which are not within the options and parameters set forth in the base shelf prospectus or this program supplement.

We may from time to time, without the consent of the existing holders of any Securities, create and issue further Securities of the same or a different series having the same terms and conditions as such Securities in all respects. Without limiting the foregoing, we may create and issue more than one series of Securities that are issued concurrently and that are identical in all respects, other than the fees or other amounts that are borne by holders of such Securities.

Currency Denomination

Unless we specify otherwise in a product supplement or pricing supplement, the Securities will be denominated in Canadian dollars and all amounts payable on the Securities will be paid in Canadian dollars. If any Security is to be denominated other than exclusively in Canadian dollars, or if any amount payable on the Security is to be paid in one or more currencies (or currency units) other than that in which that Security is denominated, additional information will be provided in the relevant product supplement or pricing supplement.

Original Issue Discount Securities

A linked Security, a fixed rate Security or a floating rate Security may be an original issue discount Security. A Security of this type is issued at a price lower than its principal amount. An original issue discount Security may be a zero-coupon Security. Securities may be issued at a significant discount from the principal amount due on their stated maturity date (or on any prior date on which the principal or an instalment of principal of a Security becomes due and payable, whether by the declaration of acceleration, call for redemption at our option, repayment at the option of the holder or otherwise), and some Securities may not bear interest.

Maturity Date

Each Security issued under our Senior Note Program will have a stated maturity date and may be subject to redemption or repayment before its stated maturity date, all as specified in a product supplement together with the applicable pricing supplement.

Interest

Interest rates that we offer on the Securities may differ depending upon, among other factors, the aggregate principal amount of Securities purchased in any single transaction. Securities with different variable terms other than interest rates may also be offered concurrently to different investors. We may change interest rates or formulas and other terms of Securities from time to time, but no change of terms will adversely affect any Security we have previously issued or any Security in respect of which we have accepted an offer to purchase.

Unless otherwise specified in the applicable product supplement or pricing supplement, each interest-bearing Security will bear interest from its date of issue at the rate per annum, in the case of a fixed rate Security, or pursuant to an interest rate formula, in the case of a floating rate Security, in each case as specified in the applicable product supplement or pricing supplement, until the principal thereof is paid. We will make interest payments in respect of fixed rate Securities and floating rate Securities in an amount equal to the interest accrued from and including the immediately preceding interest payment date in respect of which interest has been paid or from and including the date of issue, if no interest has been paid, to but excluding the applicable interest payment date or the maturity date, as the case may be.

Unless otherwise specified in the applicable product supplement or pricing supplement, interest on fixed rate Securities and floating rate Securities will be payable in arrears on each interest payment date and on the maturity date. The first payment of interest on any Security originally issued between a regular record date and the related interest payment date will be made on the interest payment date immediately following the next succeeding record date to the registered holder on the next succeeding record date. The "regular record date" will be the fifteenth calendar day, whether or not a Business Day, immediately preceding the related interest payment date. For the purpose of determining the holder at the close of business on a regular record date when business is not being conducted, the close of business will mean 5:00 p.m. Toronto, Ontario time, on that day. Calculations relating to floating rate Securities will be made by the Calculation Agent. See "— Calculation Agent" below.

Under the *Criminal Code* (Canada), a lender is prohibited from entering into an agreement or arrangement to receive interest at an effective annual rate of interest, calculated in accordance with generally accepted actuarial practices and principles, exceeding 60% of the credit advanced under the agreement or arrangement. To the extent permitted by law, we will not voluntarily claim the benefit of any laws concerning usurious rates of interest under the *Criminal Code* (Canada). If any payment due to holders of Securities is not permitted by such laws to be made, a portion of such payment may be deferred to ensure compliance with such laws and, in such case, we will pay such deferred portion to the holders of such Securities, together with interest at our equivalent term deposit rate, as soon as so permitted under applicable law.

Interest payable on linked Securities will be calculated as, and will be payable at the time or times, described in the applicable product supplement or pricing supplement.

Ratings

Securities issued under our Senior Note Program will be our direct unsecured unsubordinated obligations. For information regarding our credit ratings from various rating agencies, see our Annual Information Form incorporated by reference in the base shelf prospectus which may be viewed at www.sedar.com. You should consult the relevant rating organization with respect to the interpretation and implications of such rating. Any such rating should not be construed as a recommendation to buy, sell or hold the Securities offered. Ratings may be revised or withdrawn at any time by the respective rating organizations.

Redemption at the Option of the Bank; No Sinking Fund

In addition to any redemptions that are permitted in the circumstances contemplated under "— Special Circumstances" below, we may redeem Securities at our option prior to their maturity date if a redemption right is specified in the applicable product supplement or pricing supplement. The amount payable upon redemption of Securities will be determined as specified in the applicable pricing supplement. Unless otherwise specified in the applicable product supplement or pricing supplement, we must give written notice thereof to registered holders of the Securities to be redeemed at our option not more than 60 nor less than 30 calendar days prior to the date of redemption.

The Securities will not be subject to, or entitled to the benefit of, any sinking fund.

Repayment at the Option of the Holder

If one or more optional repayment dates are specified in the applicable product supplement or pricing supplement for particular Securities, registered holders of such Securities may require us to repay those Securities prior to their maturity date on any optional repayment date in whole or, from time to time, in part in increments of \$100 or any other integral multiple of an authorized denomination specified in the applicable pricing supplement (provided that any remaining principal amount thereof is at least \$100 or other minimum authorized denomination applicable thereto), at the repayment price or prices specified in the product supplement or pricing supplement, together with unpaid interest accrued thereon to the date of repayment. A registered holder's exercise of any repayment option will be irrevocable.

For any Security to be repaid, the Fiscal Agent must receive notice, at the address specified in the applicable product supplement or pricing supplement, not more than 60 nor less than 30 calendar days prior to the date of repayment, specifying the particular Securities to be repaid and, in the case of a book-entry-only security, repayment instructions from the applicable beneficial owner to the depository and forwarded by the depository. Only the depository may exercise the repayment option in respect of Global Securities representing book-entry-only securities. Accordingly, beneficial owners of OTC Securities that desire to have all or any portion of the book-entry-only securities represented thereby repaid must instruct the participant through which they own their interest to direct the depository to exercise the repayment option on their behalf by forwarding the repayment instructions to the Fiscal Agent. In order to ensure that these instructions are received by the Fiscal Agent on a particular day, the applicable beneficial owner must so instruct the participant through which it owns its interest before that participant's deadline for accepting instructions for that day. Different firms may have different deadlines for accepting instructions from their customers. Accordingly, beneficial owners should consult with the participant through which they hold their beneficial interest in OTC Securities for the respective deadlines. In addition, at the time repayment instructions are given, each beneficial owner of OTC Securities must cause the participant through which it owns its interest to transfer the beneficial owner's interest in the Global Security representing the related book-entry-only securities, on the depository's records, to the Fiscal Agent. Beneficial owners of Fundserv Securities that desire to have all or any portion of the book-entry-only securities represented by Global Securities repaid must send their instructions to exercise the repayment option through the Fundserv network.

Purchase of Securities by the Bank

We may at any time purchase or cause our affiliates to purchase Securities at any price or prices in the open market or otherwise. Securities so purchased by us may, at our or our affiliate's discretion, be held, resold or surrendered for cancellation.

European Union Packaged Retail and Insurance-based Investment Products Notice

No Prospectus (as defined in Directive 2003/71/EC (as amended, the "Prospectus Directive")) will be prepared in connection with the Securities. Accordingly, the Securities may not be offered to the public in any member state of the European Economic Area (the "EEA"), and any purchaser of the Securities who subsequently sells any of the Securities in any EEA member state must do so only in accordance with the requirements of the Prospectus Directive, as implemented in that member state.

The Securities are not intended to be offered, sold or otherwise made available to, and should not be offered, sold or otherwise made available to, any retail investor in the EEA. For these purposes, the expression "offer" includes the communication in any form and by any means of sufficient information on the terms of the offer and the Securities to be offered so as to enable an investor to decide to purchase or subscribe for the Securities, and a "retail investor" means a person who is one (or more) of: (a) a retail client, as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, "MiFID II"); or (b) a customer, within the meaning of Insurance Distribution Directive 2016/97/EU, as amended, where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (c) not a qualified investor as defined in the Prospectus Directive. Consequently, no key information document required by Regulation (EU) No 1286/2014 (as amended, the "PRIIPs Regulation") for offering or selling the Securities or otherwise making them available to retail investors in the EEA has been prepared, and therefore, offering or selling the Securities or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation.

Special Circumstances

The occurrence of an "**Extraordinary Event**":

- can delay or accelerate the time when the return on your Securities is calculated;
- can delay or accelerate the time at which payment of principal or return on your Securities, if any, is payable; or
- may permit us to repay the Securities in full before their maturity date.

An Extraordinary Event is an event that could have an impact on our ability to perform our obligations under the Securities or to hedge our position in respect of our obligation to make payments on the Securities. An Extraordinary Event could include, among other things:

- the occurrence or existence of a "**Market Disruption Event**", including the suspension of or a limitation on trading on a relevant stock exchange;
- the suspension of, or a limitation on, trading in securities that comprise 20% or more of a fund or an index to which Securities are linked;
- any court or governmental order prohibiting us from performing our obligations; and
- any governmental action which has a material adverse effect on relevant financial markets.

The definition of Extraordinary Event is specific to the type of Securities issued. The applicable product supplement and pricing supplement for Securities offered under our Senior Note Program will describe the events that will constitute Extraordinary Events and the consequences thereof for the Securities offered.

Calculation Agent

Our wholly owned subsidiary, RBC DS, has been appointed as the Calculation Agent under the Fiscal Agency, Calculation Agency and Fundserv Depository Agreement for all Securities issued under our Senior Note Program.

The Calculation Agent will make all calculations, valuations and determinations (collectively, "**determinations**") regarding amounts payable in respect of the Securities. Absent manifest error or if otherwise specified in the applicable pricing supplement, all determinations of the Calculation Agent will be final and binding on you and us, without any liability on the part of the Calculation Agent except in the case of the Calculation Agent's negligence, bad faith or wilful misconduct. The Calculation Agent will act solely as our agent and will not assume any obligation or duty to, or any relationship of agency or trust for or with, the holders of Securities.

We may vary or terminate the appointment of the Calculation Agent in respect of one or more series of Securities and may appoint another Calculation Agent at any time without your consent. Notice of any variation or termination of appointment will be given to affected holders pursuant to the notification procedures described under "– Notification to Holders" below. If RBC DS is not the Calculation Agent for a series of Securities, the name of the Calculation Agent for such series, together with a brief description of its qualifications and relationship, if any, to us or our affiliates will be set out in the applicable pricing supplement for such series of Securities.

See the "Risk Factors" section in the relevant product supplement and pricing supplement for your Securities for a discussion of potential conflicts of interest between you and the Calculation Agent.

Independent Calculation Experts

If, in connection with an Extraordinary Event or Substitution Event, as defined in the applicable product supplement or pricing supplement, a determination contemplated to be made by the Calculation Agent in respect of any Securities involves the application of material discretion as determined by the Calculation Agent, acting reasonably, and is not based on information or calculation methodologies compiled, utilized or provided by, or derived from, independent third party sources (including hedge counterparties), we will appoint at our cost an independent calculation expert (an "**Independent Calculation Expert**") to confirm such determination at the times, in the manner and for the purposes described in the applicable product supplement or pricing supplement. Independent Calculation Experts will be independent and will be active participants in significant markets in respect of which determinations are required to be made. For the purposes hereof,

"independent" means that the expert is not the Bank or an "insider", "associate" or "affiliate" of the Bank as such terms are defined in the *Securities Act* (Ontario), as amended. Independent Calculation Experts will act as independent experts and will not assume any obligation or duty to, or any relationship of agency or trust for or with, holders of Securities or us. Determinations made by such Independent Calculation Experts will (except in the case of manifest error) be final and binding on us, the Calculation Agent and the holders of Securities. Independent Calculation Experts will not be responsible for good faith errors or omissions in making any such determinations. Independent Calculation Experts may, acting honestly and reasonably at all times, with our consent delegate any of their obligations and functions to another independent person as they deem appropriate.

If the Independent Calculation Expert appointed by us to review and confirm a determination made by the Calculation Agent disagrees with the reasonableness of the discretionary aspects of the Calculation Agent's determination, we will appoint at our cost two additional Independent Calculation Experts. Each of the three Independent Calculation Experts will repeat the determination having regard to the basis, factors and considerations properly applicable to the initial determination by the Calculation Agent, and the average of such determination by the Independent Calculation Experts will be final and binding on us, the Calculation Agent and the holders of Securities.

Any final determination made in respect of Securities that has been confirmed by one or more Independent Calculation Experts will be accessible to holders of Securities on www.rbcnotes.com.

Notification to Holders

Unless otherwise specified in a product supplement or pricing supplement, all notices to the holders of Securities will be validly given if (1) given through the book-entry system to CDS participants or through Fundserv, as applicable, or (2) published once in a widely circulated edition of an English language Canadian newspaper and in a widely circulated French language Canadian newspaper, or (3) by mail directly to holders of Securities.

Withholding Taxes

We will pay any amounts to be paid by us on the Securities without deduction or withholding for, or on account of, any and all present or future income, stamp and other taxes, levies, imposts, duties, charges, fees, deductions or withholdings now or hereafter imposed, levied, collected, withheld or assessed by or on behalf of Canada or any Canadian political subdivision or authority that has the power to tax, unless the deduction or withholding is required by law or by the interpretation or administration thereof by the relevant governmental authority.

Manner of Payment and Delivery

We will make any payment or delivery in accordance with the applicable procedures of the depository. See "Book-Entry-Only Securities" in the base shelf prospectus and "– Global Securities" and "– Legal Ownership" in this program supplement.

Summary of Fees and Expenses

If specified in the relevant pricing supplement, certain costs, fees, expenses and other charges may be applied in determining the amount payable on your Securities. The effect of such costs, fees, expenses and other charges on the Securities, and the amount payable by us in respect thereof, will be specified in the relevant pricing supplement.

Transfer of Obligations to Branch

Where our ability to do so is clearly disclosed in the applicable pricing supplement for a Security, we may, at any time, transfer our obligations under the Securities described in such pricing supplement to any of our branches or from any of our branches to another branch or to our head office provided that such transfer shall occur subject to any restrictions or conditions which are described in such pricing supplement.

Modification and Waiver

The terms and conditions of the Securities will be set out in the Global Security (or Global Securities if more than one tranche of a series has been issued). We may amend the Global Security or Securities representing a series of Securities without your consent if, in our opinion, acting reasonably, the amendment is to correct a manifest error or would not materially and adversely affect your interests. In other cases, we may amend a Global Security or Securities if the amendment is approved by a resolution passed by the favourable votes of the holders of not less than 66⅔% of the

outstanding principal amount of the Securities of the applicable series represented at a meeting convened for the purposes of considering the resolution, or by written resolution signed by holders of not less than 66⅔% of the outstanding principal amount of the Securities of such series. The quorum for a meeting in respect of a series will be reached if holders of 10% or more of the outstanding principal amount of the Securities of such series are present or represented at the meeting. If a quorum is not reached at any meeting within 30 minutes after the time fixed for holding the meeting, that meeting will be adjourned to a later date not earlier than seven Business Days after the original meeting date, in which case the quorum required will be the holders present or represented at such adjourned meeting. The Securities do not carry the right to vote in any other circumstances.

See "– Securityholder Meetings" in this program supplement.

Events of Default

Each of the following will be an event of default with respect to the Securities of a series:

- (a) default in the payment of any amount due and payable under any Security of such series when due and continuing for five Business Days; and
- (b) the bankruptcy, insolvency or appointment of a liquidator or receiver and manager of the Bank.

For greater certainty, the five Business Day delay described in paragraph (a) above will not constitute an event of default if such delay is solely due to an Extraordinary Event. In such cases, the five Business Day period will not commence until the specified period of time for payment of any amount in connection with such Extraordinary Event has elapsed, as described in the applicable product supplement and pricing supplement.

For the purpose of determining whether the holders of a series of Securities are entitled to take any action, we will treat the stated principal amount of each Security outstanding as the principal amount of that Security (the "**outstanding principal amount**").

If an event of default occurs and is continuing in respect of the Securities of a series, the holders of not less than 25% of the outstanding principal amount of the Securities of such series may declare the maturity of the Securities to be accelerated. At any time after the holders have made such a declaration of acceleration with respect to the Securities of a series but before a judgment or decree for payment of money due has been obtained, the holders of a majority of the outstanding principal amount of the Securities of such series may rescind any such declaration of acceleration and its consequences, provided that all payments due, other than those due as a result of acceleration, have been made and all events of default with respect to the Securities of such series, other than in respect of the non-payment due solely to such declaration of acceleration, have been remedied or waived.

The holders of a majority of the outstanding principal amount of the Securities of a series may waive an event of default in respect of such series, on behalf of the holders of all the Securities of such series, except a default in the payment of any amounts due and payable under the Securities of such series.

The holders of not less than 10% of the outstanding principal amount of the Securities of a series may by written request delivered to the Bank or the Fiscal Agent direct the time, method and place of conducting any proceeding for any remedy or exercising any rights with respect to the Securities of such series, provided that such request does not conflict with any applicable law or the applicable Global Security.

Securities of a series will not have the benefit of any cross-default provisions with other obligations of the Bank.

Securityholder Meetings

Procedures for calling and holding meetings of holders of Securities issued under our Senior Note Program are set out in the Fiscal Agency, Calculation Agency and Fundserv Depository Agreement.

Governing Law

Unless otherwise specified in a product supplement or a pricing supplement, Securities issued under our Senior Note Program will be governed by and construed in accordance with the laws of Ontario and the laws of Canada applicable therein.

Plan of Distribution

The Securities will be offered severally by one or more of the Dealers. Under a dealer agreement dated January 30, 2018, as may be amended from time to time, between us and the Dealers, the Securities may be purchased or offered at various times by any of the Dealers, as agent, underwriter or principal at prices and commissions to be agreed upon, for sale to the public at prices to be negotiated with purchasers. Sale prices may vary during the distribution period and between purchasers. We may also offer the Securities to purchasers directly, pursuant to applicable law, at prices and terms to be negotiated. At the same time that a Dealer or Dealers offers the Securities, we may issue other debt securities.

Our wholly owned subsidiary, RBC DS, is one of the Dealers. **We are a related and connected issuer of RBC DS within the meaning of applicable securities legislation in connection with any offering of Securities hereunder.** RBC DS is expected to be involved in any decision to distribute Securities hereunder and in determining the terms of each particular offering of Securities. The terms of an offering of Securities will be settled by RBC DS as our agent. The pricing supplement applicable to each offering of Securities under our Senior Note Program will identify the specific Dealers, if any, offering the Securities and will specify at least one Dealer, other than RBC DS, that will have participated in the due diligence performed in respect of, but may not have participated in the structuring and pricing of, the offering of such Securities.

We or RBC DS, as agent on our behalf, may enter into arrangements to hedge our risks associated with our obligations under the Securities. We may agree that RBC DS may retain all or a portion of any profits, and may be required to compensate us for all or a portion of any losses, resulting from such hedging arrangements. In addition, RBC DS is the Calculation Agent and the Fiscal Agent in respect of Securities and the Fundserv Depository in respect of Fundserv Securities issued under our Senior Note Program. RBC DS may also undertake to facilitate a secondary market for the Securities, if so specified in the applicable product supplement or pricing supplement, including by purchasing Securities as principal and reselling such acquired Securities. RBC DS may receive a commission for acting as a Dealer in connection with the distribution of Securities hereunder and may earn a profit in connection with the acquisition or disposition of Securities acting as principal. In addition, RBC DS may receive a structuring fee in connection with structuring particular Securities, such fee to be specified in the applicable product supplement or pricing supplement.

In connection with the offering of Securities, the Dealers may over-allot or effect transactions which stabilize or maintain the market price of the Securities at a level above that which might otherwise prevail in the open market. Such stabilizing, if commenced, may be discontinued at any time.

We may withdraw, cancel or modify any offering of Securities without notice and may reject orders in whole or in part (whether placed directly with us or through the Dealers). Each Dealer may, in its discretion reasonably exercised, reject in whole or in part any order to purchase Securities received by it.

The Dealers or their affiliates may solicit offers to purchase or sell the Securities outside Canada only with our consent and in accordance with applicable law and only where the Securities may lawfully be sold on a basis exempt from the prospectus and registration requirements or similar requirements of any such jurisdiction. No action has been taken or will be taken in any jurisdiction other than Canada that would permit a public offering of the Securities, or the possession, circulation or distribution of any prospectus or any other material relating to us or the Securities in any country or jurisdiction where action for that purpose is required.

The Securities are not, and will not be, registered under the United States *Securities Act of 1933*, as amended, and the Dealers have agreed not to (1) buy or offer to buy, (2) sell or offer to sell, or (3) solicit any offer to buy any Securities as part of any distribution hereunder in the United States, its territories, its possessions and other areas subject to its jurisdiction or to, or for the account of, a U.S. person, except pursuant to exemptions from the United States *Securities Act of 1933*, as amended.

Secondary Market For Securities

Listing

Unless otherwise indicated in a product supplement or a pricing supplement, the Securities will not be listed on any securities exchange.

Dealers May Purchase

Each of the Dealers may from time to time purchase and sell Securities in the secondary market, but no Dealer is obligated to do so, and there is no assurance that there will be a secondary market for the Securities or liquidity in the secondary market if one develops. From time to time, each of the Dealers may make a market in the Securities, but the Dealers are not obligated to do so and may discontinue any market-making activity at any time.

Fundserv

If specified in the applicable pricing supplement, Securities may be purchased through dealers and other firms that facilitate purchase and related settlement through a clearing and settlement service operated by Fundserv Inc. ("**Fundserv**"). Fundserv Securities issued under our Senior Note Program will be represented by one or more Global Securities that will be deposited with the Fundserv Depository. If you purchase Fundserv Securities from a distributor on the Fundserv network, you will have an indirect beneficial interest in the applicable Global Security. That beneficial interest will be recorded in the book-entry system of the Fundserv Depository as being owned by a specific market intermediary, which in turn will record in its books the respective beneficial interests in the Fundserv Securities purchased from a distributor on the Fundserv network. See "Global Securities" and "Legal Ownership" under the heading "Description of the Securities" in this program supplement.

If specified in the applicable pricing supplement, resales of Fundserv Securities may be permitted through a distributor on the Fundserv network. In such case, you will be permitted to sell your Fundserv Securities prior to the maturity date using the "redemption" procedures of the Fundserv network commencing the day after the issue date. Such sales will be subject to certain procedures, requirements and limitations relating to use of the Fundserv network. Any other sale of Fundserv Securities will not be recognized. If you wish to sell all or a part of your holdings, you should consult with your dealer or financial advisor in advance in order to understand the timing and other procedures, requirements and limitations of selling through a distributor on the Fundserv network. To give effect to a sale of Fundserv Securities through a distributor on the Fundserv network, your dealer or financial advisor must initiate an irrevocable request to "redeem" the applicable Fundserv Securities in accordance with the then established procedures of Fundserv. The use of the Fundserv network to facilitate redemption procedures for this purpose is a matter of convenience to give effect to a sale transaction within Fundserv's existing systems and procedures. Despite this terminology, Fundserv Securities will not be "redeemed", but rather will be sold through these procedures to RBC DS. In turn, RBC DS will be able in its discretion to resell such Fundserv Securities to other third parties at negotiated prices or to hold them for its own account. You should be aware that, from time to time, the "redemption" procedures of the Fundserv network required to give effect to any resale of Fundserv Securities may be suspended for any reason without notice, thus effectively preventing you from selling your Securities. If you require liquidity or the ability to realize any gain before maturity, then you should carefully consider this possibility before purchasing Securities.

Generally, to be effective on a Business Day, a redemption request will need to be initiated by 2:00 p.m. (Toronto time) on that Business Day (or such other time as may be established by Fundserv). Any request received after such time will be deemed to be a request sent and received on the next following Business Day.

RBC DS, in its capacity as Calculation Agent, will act as the "fund sponsor" for the purpose of calculating and posting daily the "net asset value" in relation to Fundserv Securities purchased from a distributor on the Fundserv network. The sale price will represent the price at which RBC DS may offer to purchase Fundserv Securities from securityholders in connection with a secondary market transaction. Such price will be determined as of the close of business on the applicable Business Day. A sale of a Fundserv Security will be effected at a sale price equal to (i) the "net asset value" at the close of business on the Business Day on which the order is placed by RBC DS (in its capacity as Calculation Agent) using the Fundserv network, on the following Business Day, minus (ii) any applicable early trading or other charges as specified in the applicable pricing supplement. Accordingly, you will not be able to negotiate a sale price for Fundserv Securities.

There is no guarantee that the sale price for any day will be the highest possible price available in any secondary market for the Fundserv Securities, but it will represent a bid price generally available to securityholders, including clients of RBC DS, as at the relevant close of business. The "net asset value" of a Fundserv Security at any time will generally depend on, among other things, (a) if the Fundserv Securities are linked Securities, how much the levels or prices of the underlying interests have risen or fallen since the date of issue of the Fundserv Securities net of applicable charges or allowances, (b) the principal amount of the Fundserv Security, if any, that is guaranteed to be payable on the maturity date, (c) a number of other interrelated factors, including, without limitation, volatility in the levels or prices of the underlying interests, the level of interest rates in the applicable markets, dividend yields on any of the securities, if any, comprising the underlying interest, and the maturity date, and (d) if applicable, factors related to the early redemption of the Fundserv Securities, such as the

redemption price or date. The relationship among these factors is complex and may also be influenced by various political, economic and other factors that can affect the trading price of a Fundserv Security. **The resale price, if any, of your Fundserv Securities could be less than the outstanding principal amount of your Fundserv Securities.**

You may wish to consult your investment advisor on whether it would be more favourable in the circumstances at any time to sell Fundserv Securities (assuming the availability of a secondary market) or hold Fundserv Securities until the maturity date.

Information regarding Fundserv can be found at www.fundserv.com. You should consult with your financial advisor for further information on Fundserv procedures.

Risk Factors

The terms and conditions of Securities that may be offered under our Senior Note Program may introduce specific risks and investor concerns which a potential investor should carefully consider before reaching an investment decision. In addition to the risks described in the base shelf prospectus under the heading "Risk Factors", risks specific to any Securities offered will be described under similar headings in the applicable product supplement or pricing supplement. Potential investors should, in consultation with their own financial and legal advisers, carefully consider, among other matters, such risks before deciding whether an investment in the Securities is suitable. The Securities are not a suitable investment for a prospective purchaser who does not understand their terms or the risks involved in holding the Securities.

Material Contracts

Copies of any material contracts entered into in connection with Securities issued under our Senior Note Program, including the Fiscal Agency, Calculation Agency and Fundserv Depository Agreement, will be identified in the applicable product supplement and pricing supplement and may be viewed on SEDAR at www.sedar.com.

Legal Matters

Certain legal matters in connection with the offering of any Securities will be passed upon on our behalf by Davies Ward Phillips & Vineberg LLP and on behalf of the Dealers by McMillan LLP. Designated professionals of each of Davies Ward Phillips & Vineberg LLP and McMillan LLP, as a group, own beneficially, directly and indirectly, as of the date hereof, less than 1% of securities of the same class of the Bank.

Certificate of the Dealers

Dated: January 30, 2018

To the best of our knowledge, information and belief, the short form prospectus, together with the documents incorporated in the prospectus by reference, as supplemented by the foregoing, will, as of the date of the last supplement to the prospectus relating to the securities offered by the prospectus and the supplement, constitute full, true and plain disclosure of all material facts relating to the securities offered by the prospectus and the supplement as required by the securities legislation of all provinces and territories of Canada.

RBC DOMINION SECURITIES INC.

(Signed) "*CYNTHIA HANSEN*"

Cynthia Hansen
Authorized Signatory

DESJARDINS SECURITIES INC.

(Signed) "*LUC PAPINEAU*"

Luc Papineau
Authorized Signatory

LAURENTIAN BANK SECURITIES INC.

(Signed) "*PIERRE GODBOUT*"

Pierre Godbout
Authorized Signatory

NATIONAL BANK FINANCIAL INC.

(Signed) "*ÉTIENNE DUBUC*"

Étienne Dubuc
Authorized Signatory

RAYMOND JAMES LTD.

(Signed) "*THOMAS RAIDL*"

Thomas Raidl
Authorized Signatory

RICHARDSON GMP LIMITED

(Signed) "*DAN BOWERING*"

Dan Bowering
Authorized Signatory