

Report Prepared On: 08/02/13

## Structured Product Details

**Name** Buffered Bullish Enhanced Return Notes linked to Diamonds Trust

**Issue Size** \$285,000  
**Issue Price** \$1,000  
**Term** 60 Months  
**Annualized Coupon** 0.00%

**Pricing Date** February 25, 2013  
**Issue Date** February 28, 2013  
**Valuation Date** February 23, 2018  
**Maturity Date** February 28, 2018

**Issuer** Royal Bank of Canada  
**CDS Rate** 106.69 bps  
**Swap Rate** 0.92%

**Reference Asset** Diamonds Trust's stock

**Initial Level** \$137.66  
**Dividend Rate** 2.38%  
**Implied Volatility** 15.75%  
**Delta<sup>1</sup>** 0.71

**Fair Price at Issue** \$950.65

**CUSIP** 78008SYU4  
**SEC Link** [www.sec.gov/Archives/edgar/data/1000275/000121465913001054/a226131424b2.htm](http://www.sec.gov/Archives/edgar/data/1000275/000121465913001054/a226131424b2.htm)

## Related Research

### Research Papers:

[www.slcg.com/research.php](http://www.slcg.com/research.php)

- "Are Structured Products Suitable for Retail Investors?" December 2006.
- "Structured Products in the Aftermath of Lehman Brothers," November 2009.
- "What TiVo and JP Morgan Teach Us about Reverse Convertibles," June 2010.

**Tim Husson, Ph.D.,**  
Senior Financial Economist, SLCG  
(+1) 703.890.0743  
[TimHusson@slcg.com](mailto:TimHusson@slcg.com)

# Buffered Bullish Enhanced Return Notes linked to Diamonds Trust

## Description

Royal Bank of Canada issued \$285,000 of Buffered Bullish Enhanced Return Notes linked to Diamonds Trust on February 28, 2013 at \$1,000 per note.

These notes are Royal Bank of Canada-branded Buffered PLUS securities that do not pay periodic coupons, but instead pay a single amount at maturity depending on the final level of Diamonds Trust's stock.

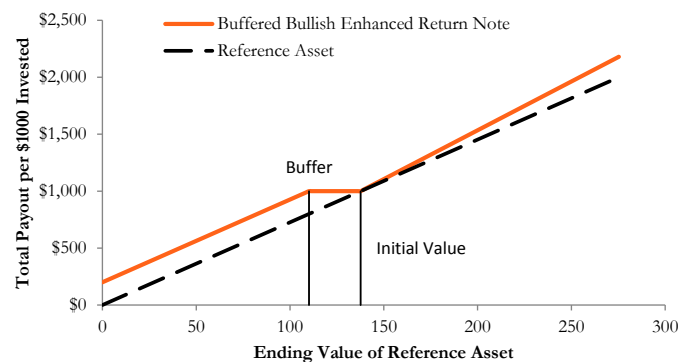
If on February 23, 2018 Diamonds Trust's stock price is higher than \$137.66, the notes pay a return equal to the percentage increase in Diamonds Trust's stock multiplied by 1.18. If on February 23, 2018 the refe is below \$137.66 but not below \$110.13, investors receive \$1,000 face value per note. If Diamonds Trust's stock price on February 23, 2018 is lower than \$110.13, investors receive face value per note reduced by the amount the reference asset is below \$110.13 as a percent of the initial level, \$137.66.

## Valuation

This product can be valued as a combination of a note from Royal Bank of Canada, one short out-of-the-money put option, and 1.18 long at-the-money call options. For reasonable valuation inputs this note was worth \$950.65 when it was issued on February 28, 2013 because the value of the options investors gave Royal Bank of Canada plus the interest investors would have received on Royal Bank of Canada's straight debt was worth \$49.35 more than the options investors received from Royal Bank of Canada.

There is no active secondary market for most structured products. Structured products, including this note, therefore are much less liquid than simple stocks, bonds, notes and mutual funds. Investors are likely to receive less than the structured product's estimated market value if they try to sell the structured product prior to maturity. Our valuations do not incorporate this relative lack of liquidity and therefore should be considered an upper bound on the value of the structured product.

## Payoff Curve at Maturity

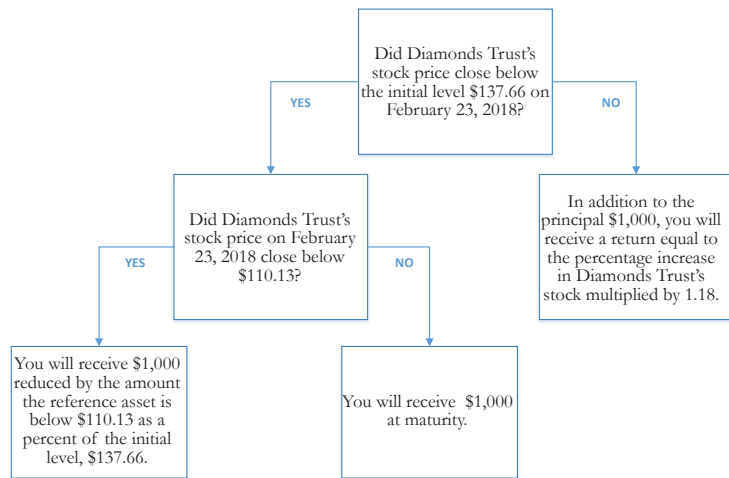


The payoff diagram shows the final payoff of this note given Diamonds Trust's stock price (horizontal axis). For comparison, the dashed line shows the payoff if you invested in Diamonds Trust's stock directly.

**Principal Payback Table**

Diamonds Trust's Stock	Note Payoff
\$0.00	\$200.00
\$13.77	\$300.00
\$27.53	\$400.00
\$41.30	\$500.00
\$55.06	\$600.00
\$68.83	\$700.00
\$82.60	\$800.00
\$96.36	\$900.00
\$110.13	\$1,000.00
\$123.89	\$1,000.00
<b>\$137.66</b>	<b>\$1,000.00</b>
\$151.43	\$1,118.00
\$165.19	\$1,236.00
\$178.96	\$1,354.00
\$192.72	\$1,472.00
\$206.49	\$1,590.00

**Maturity Payoff Diagram**

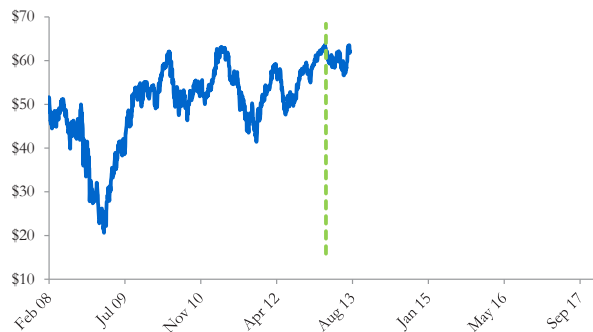


*The contingent payoffs of this Buffered Bullish Enhanced Return Note.*

**Analysis**

This Buffered Bullish Enhanced Return Note pays investors the increase in Diamonds Trust's stock multiplied by 1.18, but if Diamonds Trust's stock declines over the term of the note, investors will suffer losses equal to the percentage decline in Diamonds Trust's stock. In addition, investors bear the credit risk of Royal Bank of Canada. Investors purchasing this Buffered Bullish Enhanced Return Note effectively sell at-the-money put options to Royal Bank of Canada, buy at-the-money call options, and a zero-coupon note from Royal Bank of Canada. This Buffered Bullish Enhanced Return Note is fairly priced if and only if the market value of the options investors received from Royal Bank of Canada equals the market value of the options investors gave Royal Bank of Canada plus the interest investors would have received on Royal Bank of Canada's straight debt.

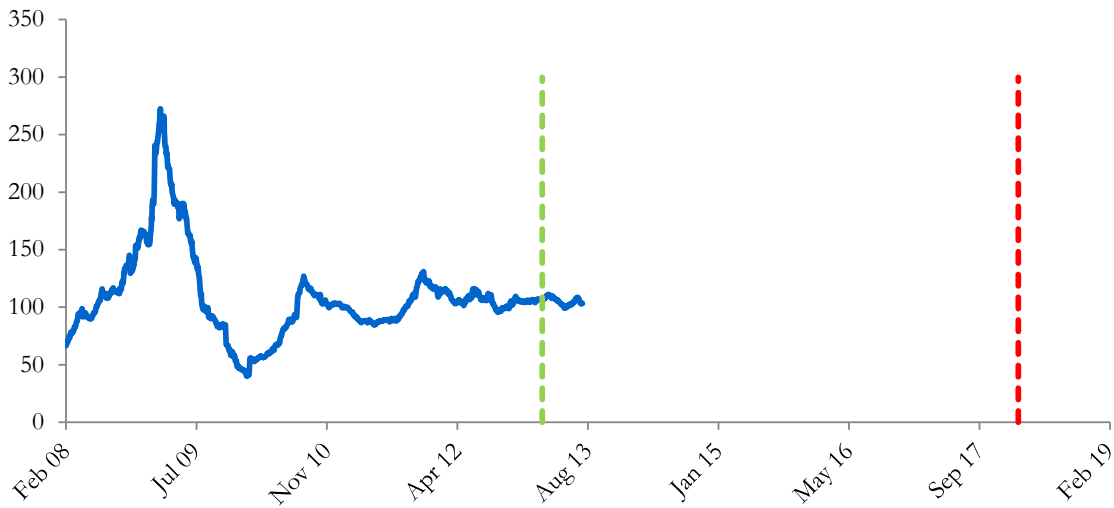
**Royal Bank of Canada's Stock Price**



*The graph above shows the adjusted closing price of the issuer Royal Bank of Canada for the past several years. The stock price of the issuer is an indication of the financial strength of Royal Bank of Canada. The adjusted price shown above incorporates any stock split, reverse stock split, etc.*

### Royal Bank of Canada's CDS Rate

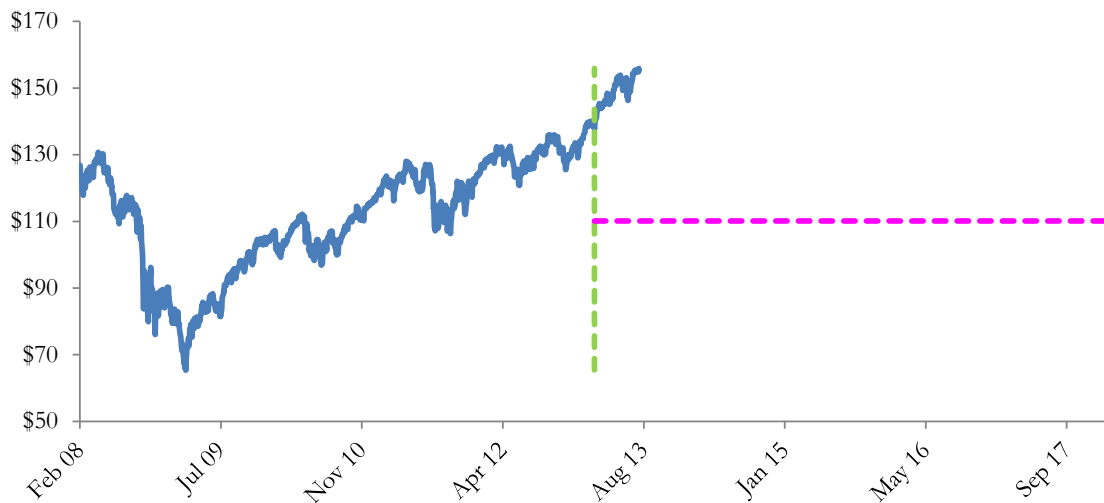
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Credit default swap (CDS) rates are the market price that investors require to bear credit risk of an issuer such as Royal Bank of Canada. CDS rates are usually given in basis points (bps). One basis point equals 0.01%. Higher CDS rates reflect higher perceived credit risk, higher required yields, and therefore lower market value of Royal Bank of Canada's debt, including outstanding Buffered Bullish Enhanced Return Note. Fluctuations in Royal Bank of Canada's CDS rate impact the market value of the notes in the secondary market.

### Diamonds Trust's Stock Price

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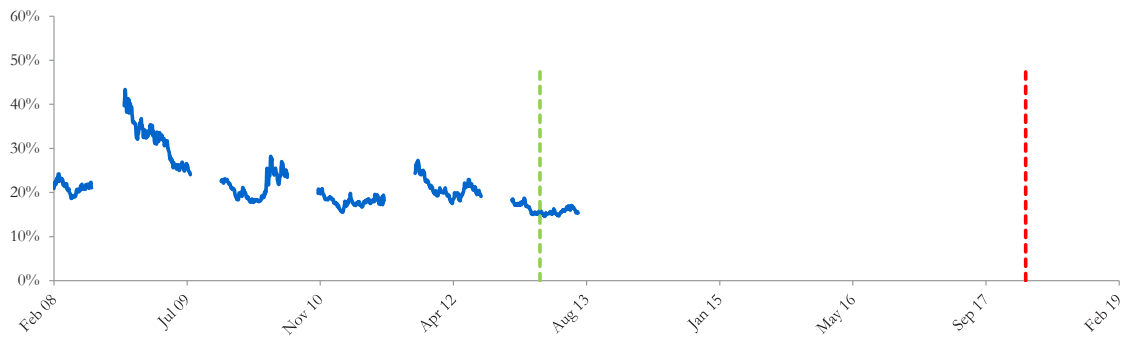
The graph above shows the historical levels of Diamonds Trust's stock for the past several years. The final payoff of this note is determined by Diamonds Trust's stock price at maturity. Higher fluctuations in Diamonds Trust's stock price correspond to a greater uncertainty in the final payout of this Buffered Bullish Enhanced Return Note.

### Realized Payoff

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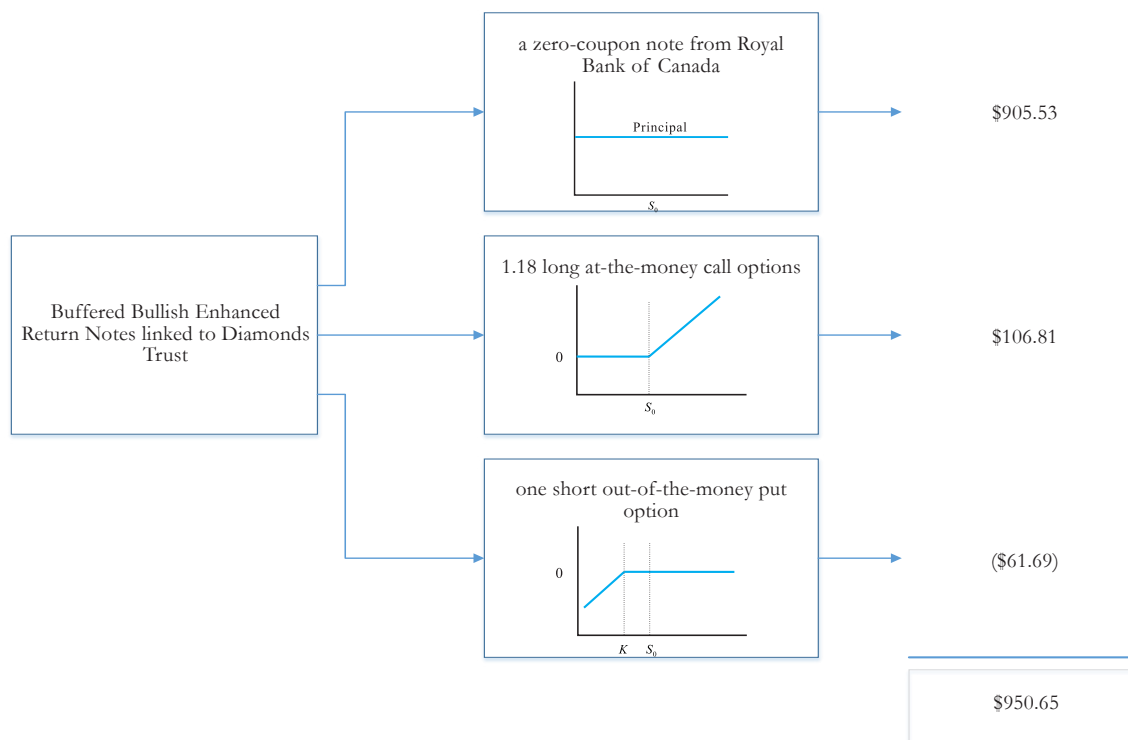
This product will mature on February 28, 2018.

## Reference Asset Diamonds Trust's Stock's Implied Volatility



The annualized implied volatility of Diamonds Trust's stock on February 25, 2013 was 15.75%, meaning that options contracts on Diamonds Trust's stock were trading at prices that reflect an expected annual volatility of 15.75%. The higher the implied volatility, the larger the expected fluctuations of Diamonds Trust's stock price and of the Note's market value during the life of the Notes.

## Decomposition of this Buffered Bullish Enhanced Return Note



This note can be decomposed into different components, and each component can be valued separately. The chart above shows the value of each component of this Buffered Bullish Enhanced Return Note.

1. Delta measures the sensitivity of the price of the note to the Diamonds Trust's stock price on February 25, 2013.
2. CDS rates can be considered a measure of the probability that an issuer will default over a certain period of time and the likely loss given a default. The lower the CDS rate, the lower the default probability. CDS rate is given in basis points (1 basis point equals 0.01%), and is considered as a market premium, on top of the risk-free rate, that investors require to insure against a potential default.
3. Fair price evaluation is based on the Black-Scholes model of the Diamonds Trust's stock on February 25, 2013.
4. Calculated payout at maturity is only an approximation, and may differ from actual payouts at maturity.
5. Our evaluation does not include any transaction fees, broker commissions, or liquidity discounts on the notes.