

NORTHGATE EXPLORATION LTD  
Form 6-K  
May 10, 2004

---

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER  
PURSUANT TO RULE 13a-16 OR 15d-16 UNDER  
THE SECURITIES EXCHANGE ACT OF 1934

For the month of May 2004.

**Northgate Exploration Limited**

(Translation of registrant's name into English)

2050 - 1055 West Georgia Street  
Vancouver, British Columbia  
Canada V6E 3R5  
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 401-F:

Form 20-F

Form 40-F

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1): \_\_\_\_\_

Indicate by check mark whether by furnishing the information contained in this Form, the registrant is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes

No

If "Yes" is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b): 82-\_\_\_\_\_

---

SIGNATURES

Pursuant to the requirements of the Securities and Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereto duly authorized.

Registrant:  
Northgate Exploration Limited

Date: May 10, 2004.

(signed)  
Jon Douglas  
Chief Financial Officer

---

*News Release*

**NORTHGATE EXPLORATION LIMITED**

**Stock Symbols: TSX: NGX, AMEX: NXG**

**Website: [www.northgateexploration.ca](http://www.northgateexploration.ca)**

**Northgate Moves Four Million Ounces of Gold into Reserve at Kemess North**

VANCOUVER, May 7, 2004

*(All figures in US dollars except where noted)* - Northgate Exploration Limited (TSX:NGX; AMEX:NXG) is pleased to announce that it has completed a revised pre-feasibility study on the Kemess North deposit and moved 4.1 million ounces of gold and 1.46 billion pounds of copper from an indicated resource to a probable reserve. Reserves within the Kemess camp are now sufficient to extend production until at least 2020.

---

**Kemess North Highlights**

- Probable Reserve: 414 million tonnes grading 0.31 g/t gold and 0.16% copper;
- Contained Metals: 4.1 million ounces gold and 1.46 billion pounds copper;
- Recoverable Metals: 2.6 million ounces gold and 1.3 billion pounds of copper;
- Extends life of Kemess operation to 2020
- Total capital cost: \$160 million;
- Internal rate of return: 8.6% using gold price of \$375 per ounce and a copper price of \$1.00 per pound

---

The revised Kemess North Pre-feasibility study envisions three phases of operation. Between 2004 and 2006 Kemess South will produce an average of 310,000 ounces of gold per year at a cash cost of \$118 per ounce; between 2007 and 2009 when both Kemess pits are in operation, gold production will average 288,000 ounces per year at a cash cost of \$141 per ounce; and from 2010 until 2020 average production will be 208,000 ounces per year at an average cash cost of \$181 per ounce. The final feasibility study will be completed in the summer of 2004. The study has been delayed by several months as a result of (i) additional geotechnical field work completed in January 2004 to verify the pit design and (ii) detailed engineering work related to the tunnel/conveyer system that was identified midway through the feasibility study as the preferred method of moving ore from the Kemess North open pit to the Kemess South concentrator. Permitting continues to advance in discussions with Provincial and Federal regulators. Northgate has targeted the second quarter of 2005 to have permits in place so that construction can begin in the summer of 2005.

---

Ken Stowe, President and Chief Executive Officer, commented: *"The results of the revised pre-feasibility study on Kemess North have given us the technical confidence to move the Kemess North deposit into a probable reserve category. Over the next three months we will complete more detailed engineering work on the tunnel/conveyer system to bring this portion of our work up to feasibility standard and complete the feasibility study on Kemess North. We will continue with the permitting process and will begin to consider various financing alternatives for the development of Kemess North when this process is further advanced. As we expected, Kemess North provides Northgate with over a decade of additional mine life within the Kemess Camp and returns substantial incremental cash flow. It also provides Northgate the opportunity to find additional sources of ore within the Kemess Camp that will further enhance the value of the Kemess asset."*

#### Revised Pre-feasibility Study

In the fall of 2003, Northgate began detailed feasibility study field work on the Kemess North project. This work included geotechnical and condemnation drilling to confirm pit design parameters and to finalize the location of the access road and waste rock/tailings impoundment locations and environmental monitoring studies necessary for the preparation of an Environmental Impact Study (EIS).

Over the same period, the Kemess North project team undertook detailed engineering and design studies and capital cost estimates for the infrastructure required to bring the Kemess North deposit into production. During this process, pump testing determined that the crushed ore pipeline envisioned in the September 2003 pre-feasibility study would require both the SAG and ball mills at Kemess South be relocated to Kemess North to reduce the ore to a finer size prior to entering the pipeline. The additional capital for this change was substantial, so the team went back to the original conveyor/tunnel concept to transport ore to the Kemess mill. As a result, engineering work on the tunnel/conveyer system is only at a pre-feasibility study standard, necessitating a delay in the release of the final feasibility study on Kemess North. All the other aspects of the work completed to date are to feasibility study standards. Northgate management is confident that the technical aspects of the project are well understood and is upgrading a significant portion of the Kemess North Indicated Resource to a Probable Reserve consistent with NI 43-101. A technical report in support of this change will be filed on SEDAR within the next 10 days.

The Kemess North pre-feasibility and feasibility work has been carried out under Northgate's direction with the support of several independent engineering firms engaged to provide specific technical expertise in the areas of process design, metallurgical evaluation, pit design and tailings management. Table 1 lists the engineering firms involved and their areas of expertise.

---

Table 1 - Independent Engineering Firms

<b>Technical Area</b>	<b>Firm</b>
Process Design	Hatch Associates Limited
Geotechnical	Knight Piesold Consulting
Metallurgy	Lakefield Research/K.V. Konigsmann
Pit Design	GR Technical Services
Tailings Design and Environment	Klohn Crippen

## Probable Reserve

The revised pre-feasibility study on the Kemess North deposit identifies a probable ore reserve of 414 million tonnes at 0.31 g/t gold and 0.16% copper within the designed Kemess North open pit. The life of mine waste:ore stripping ratio for the Kemess North pit is 0.81:1.

Table 2 - Probable Reserve

	<i>Quantity</i> (million mt)	<i>Grade</i>		<i>Contained Metals</i>	
		Gold (g/t)	Copper (%)	Gold (million oz)	Copper (million lbs)
Kemess North	414	0.31	0.16	4.1	1,457

## Kemess North Development and Production

The mine plan at Kemess North has been optimized and integrated into the Kemess South mine plan and will require the addition of four 240-tonne haul trucks, two dozers, two graders and a small pit wall drill.

Development of the Kemess North infrastructure will begin in 2005. Pre-stripping of the deposit will begin in 2006 in preparation for the treatment of the first ore from the deposit near the end of 2006. Development will require the construction of a primary crusher and a truck maintenance building at the Kemess North site. Ore from Kemess North will be transported via a 4 km tunnel/8 km conveyer to the existing ore stockpile at the Kemess South plant site. Development will also require construction of a 13 km road and power and water lines to the Kemess North site as well as a new tailings line to carry tailings from the mill to a new impoundment facility at Duncan Lake.

In order to accommodate the additional ore production from Kemess North, a third milling circuit consisting of a SAG mill and ball mill will be constructed adjacent to the existing Kemess South mill building. The current flotation system has sufficient capacity to process ore from the combined Kemess South/North operation with relatively minor modifications.

During the period of simultaneous operation of the Kemess North and South pits commencing in late 2006, annual mill throughput will rise to 84,000 tonnes per day from the current rate of 53,000 tonnes per day. Once reserves are exhausted at Kemess South at the beginning of 2010, production will rise to an average of 88,000 tonnes per day for the remainder of the Kemess North reserve life.

The annual production of gold at Kemess for the three phases of operation is shown in Table 3.

Table 3 - Production Summary

	Units	2004-2006 Kemess South	2007 - 2009 Combined	2010 - 2020 Kemess North
Pre-stripping	million tonnes	-	20	-
Mining rate	million tonnes/year	45	45	57
Milling rate	tonnes/day	53,000	84,000	88,000
<b>Annual Production:</b>				
Gold	ounces	310,000	288,000	208,000
Copper	million lbs	82	98	105
Silver	ounces	435,000	570,000	620,000

Mill tailings and waste rock from Kemess North will be impounded underwater in Duncan Lake beginning in 2005 and ultimately, once the Kemess South mine is exhausted, the Kemess South open pit will also be used for tailings impoundment. Underwater storage represents the best long-term environmental option for containment of tailings and waste rock and the only known solution that prevents acid generation and the leaching of metals into the environment. At the conclusion of mining, closure plans include the reestablishment of fish habitat in Duncan Lake.

#### Ore Metallurgy

Kemess North ore is exclusively hypogene ore with similar milling and metallurgical characteristics to the hypogene ore at Kemess South. Extensive metallurgical test work performed at Lakefield Research has determined that recoveries of 62% for gold and 89% for copper can be expected over the life of the Kemess North mine.

#### Capital Expenditures

The development of the Kemess North deposit will require an initial capital expenditure of \$160 million over the 2005 and 2006 period. Sustaining capital over the entire 16 mine life will total \$85 million. A more detailed summary of capital requirements by year is shown in Table 4.

Table 4 - Kemess North Capital Expenditure Summary

Description (millions)	2005	2006	Total
Tunnel/Conveyer	20	26	46
Mining equipment & pre-stripping	5	15	20
Third grinding line	5	30	35
Crusher and Infrastructure	15	25	40
Tailings and water management	19	-	19
<b>Total</b>	<b>64</b>	<b>96</b>	<b>160</b>

## Operating Costs

The operating cost projections for the combined Kemess South/Kemess North mine plan have been estimated based on Northgate's operating experience at Kemess South and the specific requirements of the Kemess North development plan. Operating costs for the three phases of operation are shown in Table 5.

Unit operating costs at Kemess North will be substantially lower than those at Kemess South due to the lower stripping ratio of the Kemess North ore body, a reduction in milling costs due to higher throughput and lower tailings disposal and fixed overhead costs.

Table 5 - Operating Cost Summary (Cdn\$/tonne milled, except where noted)

	2004-2006 Kemess South	2007 - 2009 Combined	2010 - 2020 Kemess North
Mining <sup>(1)</sup>	\$ 2.48	\$ 1.57	\$ 1.85
Milling	2.63	2.41	2.20
G&A	1.20	0.76	0.73
Total	\$ 6.31	\$ 4.74	\$ 4.78
Gold Cash Cost (US\$/ounce)	\$ 118	\$ 141	\$ 181

1. Mining costs on a per tonne of material moved basis are \$1.03 (2004 - 2006), \$1.06 from 2007-2009 and \$1.00 (2010 - 2020).

## Project Economics

At prices of \$375 per ounce for gold, \$1.00 for copper and an exchange rate of Cdn\$/US\$ 1.45, the un-levered internal rate of return ("IRR") on the incremental cash flow generated by Kemess North is 8.6 %. Table 6 provides IRR sensitivities to changes in selected price and operating assumptions and Table 7 provides an IRR matrix at different prices of gold and copper.

Table 6 - Internal Rate of Return Sensitivities

Parameter	Change	Approximate IRR Change
Gold Price	+\$25/oz	1.7%
Copper Price	+\$0.05/lb	1.5%
F/X rate	+0.05 Cdn\$/US\$	1.8%
Initial Capital	+\$10 million	0.7%
Smelter Charges	+\$5/mt/\$0.005/lb	0.5%

Table 7 - Effect of Gold and Copper Prices on IRR

		Copper Price \$/lb				
		\$0.90	\$0.95	\$1.00	\$1.05	\$1.10
<b>Gold Price</b>	\$350	3.2%	5.1%	6.8%	8.4%	9.9%
	\$375	5.2%	7.0%	8.6%	10.1%	11.5%
	\$400	7.1%	8.8%	10.3%	11.7%	13.1%
	\$425	8.9%	10.4%	11.9%	13.3%	14.6%
	\$450	10.6%	12.0%	13.4%	14.7%	16.0%

## Completion of Final Feasibility Study

Northgate expects to complete the Kemess North feasibility study during the summer of 2004. The study will incorporate (i) the final design of the tunnel/conveyor ore transport system, (ii) a cost-benefit analysis of further increases in mill throughput by increasing the size of the new grinding line and, (iii) any additional reserves created at Kemess South as a result of the 2004 drilling program.

---



### Permitting

The permitting process commenced in October 2003 with the filing of a Project Description with the British Columbia Environmental Assessment Office. Numerous discussions have taken place with Provincial and Federal regulators, First Nations and other stakeholders with regards to water quality, fisheries and waste and tailings disposal options. Technical data, alternative studies and compensation plans have been completed with the goal of obtaining permits during the second quarter of 2005.

\*\*\*\*\*

Northgate Exploration Limited is a gold and copper mining company focused on operations and opportunities in North and South America. The Corporation's principal assets are the 300,000-ounce per year Kemess South mine in north-central British Columbia and the adjacent Kemess North deposit, which contains a Probable Reserve of 4.1 million ounces of gold. Northgate is listed on the Toronto Stock Exchange under the symbol NGX and on the American Stock Exchange under the symbol NXG.

### Forward-Looking Statements

This press release includes certain "forward-looking statements" within the meaning of section 21E of the *United States Securities Exchange Act of 1934*, as amended. Forward-looking statements include without limitation, statements regarding future production, potential mineralization and reserves, exploration results and future plans and objectives of Northgate Exploration Limited (Northgate). Forward-looking statements generally can be identified by the use of forward-looking terminology such as "may," "will," "expect," "intend," "estimate," "anticipate," "believe," or "continue" or the negative thereof or variations thereon or similar terminology. There can be no assurance that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Important factors that could cause actual results to differ materially from Northgate's expectations are disclosed under the heading "Risk Factors" in Northgate's 2003 Annual Report and under the heading "Trends, Risks and Uncertainties" in Northgate's 2003 Annual Information Form (AIF) both of which are filed with Canadian regulators on SEDAR ([www.sedar.com](http://www.sedar.com)) and with the United States Securities and Exchange Commission ([www.sec.gov](http://www.sec.gov)).

For further information, please contact:

**Mr. Ken G. Stowe**  
*President and Chief Executive Officer*  
416-216-2772

**Mr. Jon A. Douglas**  
*Senior Vice President and Chief Financial Officer*  
416-216-2774