Atrum Coal
COAL FOR STEEL

ASX Release

22 June 2016

# CORRECTION - UPDATED PRE-FEASIBILITY STUDY – LOW CAPITAL STARTER MINE FOR GROUNDHOG NORTH

## HIGHLIGHTS

- Atrum is currently finalising a revised Pre-Feasibility Study for the Groundhog North Mining Complex, which now includes a staged approach to development initially employing a low cost starter mine producing 880,000tpa ultra-high grade anthracite.

  Starter mine economics:
  - Total capital requirement of US$142M, with 64% funded by third parties (the majority through the equipment financing arrangement with China Coal Technology and Engineering Group ("CCTEG"))
  - Project NPV of US$239M
  - Project IRR of 21%, and equity IRR of 38%

- Potential major customers for Atrum's anthracite are now requesting access to bulk samples for testing

- Following the grant of the Bulk Sample Permit, Atrum team has commenced preparations for site works

## GROUNDHOG NORTH: Activity Update

Atrum Coal NL ("**Atrum**" or the "**Company**") (**ASX: ATU**) is pleased to provide an update on the Pre-Feasibility Study ("**PFS**") for the Groundhog North Mining Complex ("**Groundhog North Complex**"; refer Figure 1), British Columbia, Canada.

The Company announced results from its initial Pre-feasibility Study on 6 May 2014 (refer to ASX announcement 6 May 2014 "A$2.1 Billion NPV for First Stage Production at Groundhog Anthracite

Project") and provided supplementary guidance on the Pre-feasibility Study on 20 October 2014 (refer to ASX announcement on 20 October 2014 "Supplementary PFS delivers A$1.7 Billion NPV for Groundhog North").

Over the last year the Company has been updating the PFS based on additional studies. In preparing the revised PFS, the Company has evaluated a number of small scale starter mine options that accelerate early cash flows for minimal capital cost which maximise shareholder returns. A preferred option has been identified and modelled which has been incorporated into the draft development plan for the Complex.

The Company has now started engaging with potential strategic and financial investors in relation to funding the bulk sample extraction and ultimately, subject to permitting, a small scale starter mine development.

Robert Bell, Executive Chairman commented:

> *"The award of the Bulk Sample Permit and the updated PFS with the smaller, starter mine demonstrates the economic viability of the Groundhog North project and accelerates Atrum's plans to achieving commercial production. We can now proceed with detailed discussions with potential long-terms buyers of Groundhog anthracite, as well as potential strategic and financial investors. We will update the market as these discussions deliver partners that share our vision to become a world class, low cost, anthracite producer."*
>
> *"The supply-demand dynamic of high-grade and ultra-high grade anthracite used in metals manufacture, filtration, plastics manufacture, for briquettes and for specialty carbon products continues to be encouraging for Atrum's near term entry to production. Global seaborne supply of anthracite has halved over the past decade, creating a structural supply shortage of anthracite."*

Following drilling in 2014, the Company completed a JORC 2012 Coal Resource Estimate for the Groundhog North Complex (refer to ASX announcement 14 August 2015, "Resource Increase at Groundhog North" including the accompanying JORC Table 1) and identified potential mining areas that could be developed with small scale starter mines. These areas have now been investigated in more detail and added to the PFS.

## GROUNDHOG NORTH: Revised Pre-Feasibility Study

An updated PFS is being finalised at present. In the updated PFS, the Company has adopted a staged approach to development, beginning with a low capital cost underground mine, capable of producing up to 880,000tpa of saleable ultra-high-grade anthracite (based on the assumptions set out below). The updated PFS, when finalised, will include subsequent development stages for the larger underground operations at the Groundhog North Complex. This development approach has been well-received by potential off-take investors and joint venture funding partners.

The staged approach to the development of the Groundhog North Complex importantly provides the Company with early cash flows while the larger underground operations are being developed in step with infrastructure capacity.

The smaller, starter mine will allow the Company to:

- establish operations in the area;
- prove the logistics chain for transporting larger amounts of product;
- continue to develop long term and sustainable relationships with the Company's aboriginal partners;
- train aboriginal and local personnel to build a workforce that will support sustainable, long-term operations;
- establish customer channels;
- investigate alternative high value markets;
- increase debt funding potential for the larger underground mini-wall operations and thus provide superior shareholder returns, by leveraging greater debt servicing ratios from cash reserves;
- generate early cash flows, not just for the Company, but for local families, contractors, communities, and government; and
- build credibility with a range of key stakeholders, including parties interested in the Company's growth and value potential.

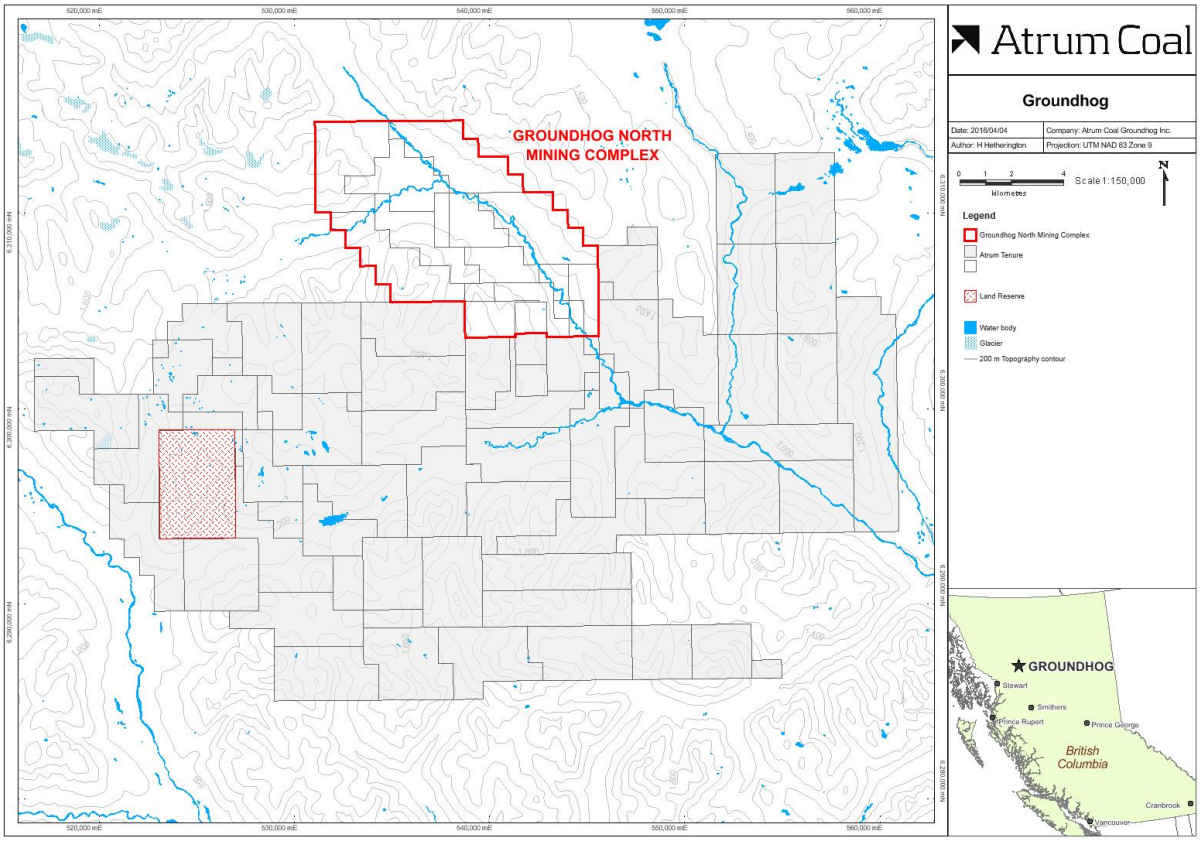


Figure 1. Location of the Groundhog North Mining Complex

The scaled down starter mine will establish access to existing road, rail and port infrastructure in the local area, minimizing capital expenditures through a staged approach. The overall Groundhog North Complex has been designed around a resource base of 1.016 Billion tonnes of anthracite (JORC 2012 – refer to Table 1 and Figure 2 below and to ASX announcement 14 August 2015, "Resource Increase at Groundhog North").

Table 1. Groundhog North Resources (JORC 2012)

| Geological Area | Measured | Indicated | Inferred | Total |
|---|---|---|---|---|
| Western Domain | 156 | 193 | 260 | **609** |
| Eastern Domain | 0 | 260 | 147 | **407** |
| Total | **156** | **453** | **407** | **1,016** |
| % of total | **15.4%** | **44.6%** | **40.0%** | |

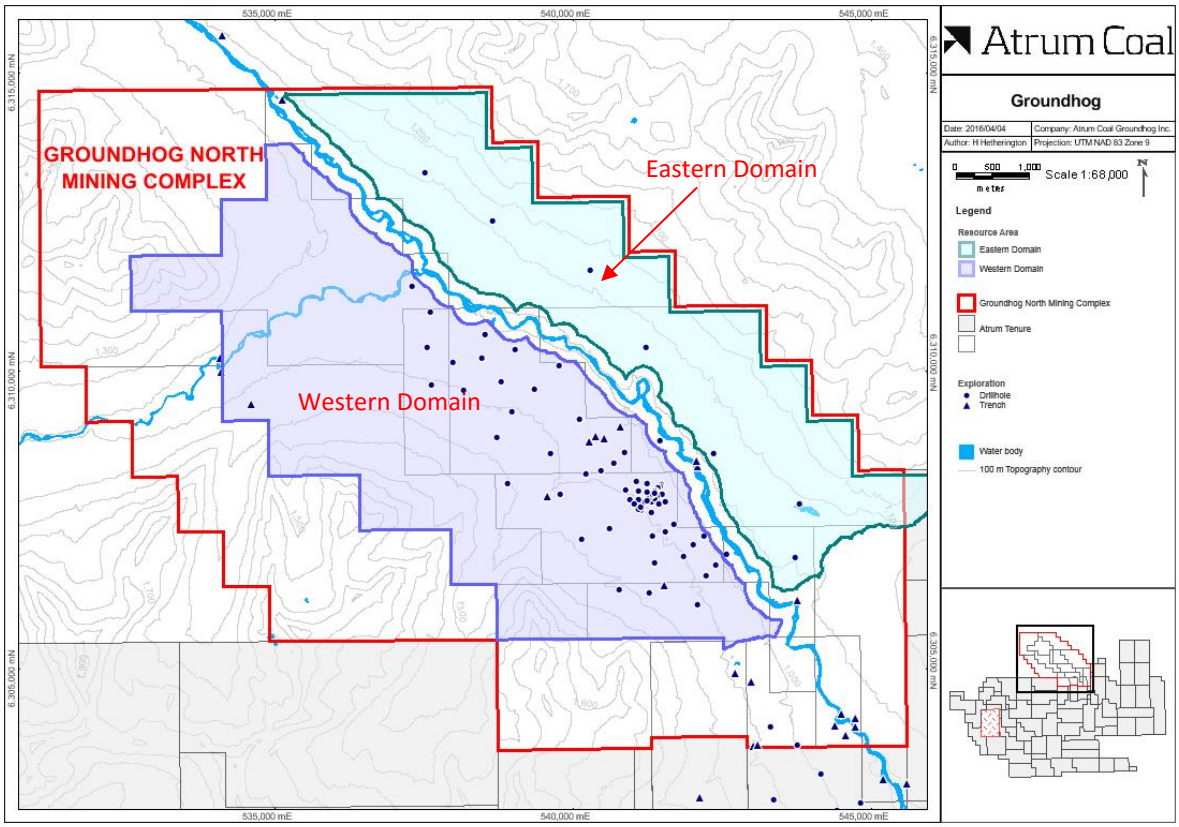


Figure 2. Groundhog North Mining Complex Geological Domains

The starter mine included in the revised PFS is located in the Western Domain of the Groundhog North Complex has estimated total capital of **US$142M,** is capable of producing up to **880,000tpa**

of saleable ultra-high-grade anthracite (comprising of 26% Measured resources; 32% Indicated resources; 43% Inferred resources). The Mineral Resources underpinning the production target have been prepared by a Competent Person in accordance with the requirements in Appendix 5A (JORC Code).

There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

The material assumptions made by the Company in calculating the production target for the starter mine of **880,000tpa** of saleable ultra-high-grade anthracite are:

- Seam thicknesses – defined by exploration data and seam modelling;
- Mine layout options and productivity – revised layout to promote early production;
- Mining methods and productivity – use of pillar extraction methods to enable early production volumes prior to miniwall operations;
- Equipment selection – review of continuous haulage systems to improve development performance;
- Modified seam access location and entry methodology – lower depth of cover location and combination of access means.

The initial small mine allows the Company to prove the mining concept in the region, and generate cash so that further mines can leverage cash flows, maximising shareholder returns. Not only is it forecast for the starter mine to return **US$239M NPV** (real, WACC 7.6%, post-tax Project NPV) based on the production target of **880,000tpa** of saleable ultra-high-grade anthracite, this mine is expected to provide investors with a lower risk entry into a rising anthracite market. The forecast operating cash cost[1] of this small scale mine is **US$96/t FOB**. Based on equity capital of **US$51M** the equity IRR is **38%**. The material assumptions made by the Company in calculating the forecast financial information are set out in 'Table 2. Pre-Feasibility Economic Assessment (starter mine)', 'Table 3. Capital Expenditure estimates (starter mine)' and 'Table 4. Operating Cost estimates (starter mine)'.

Table 2. Pre-Feasibility Economic Assessment (starter mine)

[1] Refer to Table 2. Pre-Feasibility Economic Assessment; Table 3. Capital Expenditure Estimates; Table 5. Operating Cost Estimates

| Groundhog North Mining Complex:<br>Starter Mine: Financial Analysis (US$) | |
|---|---|
| | Starter Mine |
| **Mine Life** | 28 years |
| **Saleable product (maximum)** | 880ktpa |
| **Equity Capital** | $51M |
| **Total Capital** | $142M |
| **Operating Cost (avg. FOB cash incl. royalties)** | $96/t |
| **Price (avg. FOB, Table 5 estimating 50% lump)** | $156/t |
| **Project NPV (post tax; WACC 7.6% real)** | $239M |
| **Equity NPV (post tax; CAPM 10.0% real)** | $179M |
| **Project IRR (post tax)** | 21% |
| **Equity IRR (post tax)** | 38% |

From the small scale starter mine, numerous development paths can be selected from a staged ramp-up to a 1.6Mtpa continuous miner operation through to a larger mini-wall operation as noted in previous PFS releases (refer ASX announcement 6 May 2014 "A$2.1 Billion NPV for First Stage Production at Groundhog Anthracite Project" and ASX announcement on 20 October 2014 "Supplementary PFS delivers A$1.7 Billion NPV for Groundhog North"). The Company is updating the economic modelling of these options at present, and will release these results in the coming weeks.

The low capital start-up mine can be a stand-alone operation, established with a relatively low equity contribution of US$51M as shown in Table 2, with approximately US$15M funded for infrastructure development from third parties and the remainder from the existing CCTEG equipment finance facility (refer Atrum Coal ASX release 5 May 2015, "Atrum Signs US$100 Million Equipment Finance and Supply Agreement").

Table 3. Capital Expenditure estimates (starter mine)

| Groundhog North Mining Complex:<br>Starter Mine: Capital Expenditure Estimate (US$) | |
|---|---|
| Mining Equipment & Construction | $72.7M |
| CHPP & Loadout | $12.3M |
| Surface Infrastructure & Water Mgmt. | $6.9M |
| Power Supply (gen sets – could be reduced through rental option) | $12.6M |
| Offsite Infrastructure (Road/Rail/Port – potentially via Atrum Infrastructure and Logistics Pty Ltd | $32.5M |

| | |
|---|---|
| Feasibility Studies & Permitting | $5.0M |
| **Total Capital Expenditure** | **$142.0M** |

It is envisaged that Atrum Infrastructure and Logistics Pty Ltd ("**ATIL**") will fund much of the off-site infrastructure associated with the both the initial starter mine and subsequent infrastructure build-outs for larger operations at Groundhog and will charge Atrum a service fee. The Company is assessing a number of options to fund AIL, including an option to 'spin-out' the infrastructure unit.

Table 4. Operating Cost estimates (starter mine)

| Groundhog North Mining Complex: Starter Mine: Operating Costs (US$/t) | |
|---|---|
| Mining ($/ROMt) | $30.14 |
| Processing ($/ROMt) | $6.76 |
| Yield (primary) | 62.5% |
| **Ex-mine cash cost ($/t saleable)** | **$59.03** |
| Transport ($/t saleable) | $23.37 |
| Royalties ($/t saleable) | $1.35 |
| Admin & O/H ($/t saleable) | $12.21 |
| **FOB Cash Cost ($/t saleable)** | **$95.97** |

Forecast operating costs of the starter mine are competitive with other anthracite exporters, and well below current available pricing for high-grade anthracite, subsequently producing strong average EBITDA margins. The continuous miner operation will use modern roof-bolt methods for improved strata control, and a modified pillar extraction method for maximum resource utilisation. Run-of-mine coal will be transported by conveyor to a small, modular coal handling and preparation plant, for beneficiation into primary, low ash lump and fine products. Product yields from the Duke E seam can reach up to 85%, but the financial analysis of the starter mine uses conservative 62.5% yield estimates. Transport from the mine will be via road and rail to export ports in Stewart and Prince Rupert. Administration and overhead charges account for sales and distribution, as well as work teams growing the broader Atrum business, including the advancement of other mines at Groundhog and Panorama, and Atrum Infrastructure and Logistics Pty Ltd.

## Anthracite Market and Pricing

The Company has updated the "Anthracite Market" section of the PFS and provides the following update:

Global anthracite markets remain undersupplied, and market prices for anthracite are strong. Current prices for imported anthracite are approximately US$150/t for lumps and US$100/t for fines (basis 5% volatile matter; 12% ash), see Table 4 and Figure 4.

The Company is utilising conservative long-term average anthracite prices as its benchmark for long-term pricing forecasts in all PFS modelling, as shown in Table 5.

Table 5. Anthracite and Coking Coal Prices used in PFS

| | Current Prices (May 2016) | Historical Prices (5-year average) | PFS prices (long-term average) |
|---|---|---|---|
| **Anthracite Lump (CFR[2] Northern Europe)** | US$150/t | US$190/t | **US$189/t** |
| **Anthracite Fines (CFR Northern Europe)** | US$100/t | US$135/t | **US$128/t** |
| **Hard Coking Coal (FOB[3] Queensland)** | US$95/t | US$170/t | N.A. |

Source: Resource-Net

The premium in anthracite pricing has remained throughout the coking coal cycle and as metallurgical coals increase in price due to supply/demand imbalances, anthracite has maintained and in some cases, improved its relative price position. With the growth in specialty markets (see below), anthracite is enjoying increased demand, leading larger metallurgical coal companies, steel mills, traders and carbon suppliers to look for emerging supply sources in a tight market. With the award of the Bulk Sample Permit, Atrum's Groundhog resource has been enjoying significant interest from potential customers and off-takers, including for speciality anthracite (see following pages).

[2] CFR means Cost and Freight whereby the seller bears the cost of transporting the product to the named destination port (Incoterms 2010, International Chamber of Commerce)
[3] FOB means Free On Board whereby the seller bears the cost of delivering the product across the ship's rail at the named loading port (Incoterms 2010, International Chamber of Commerce)

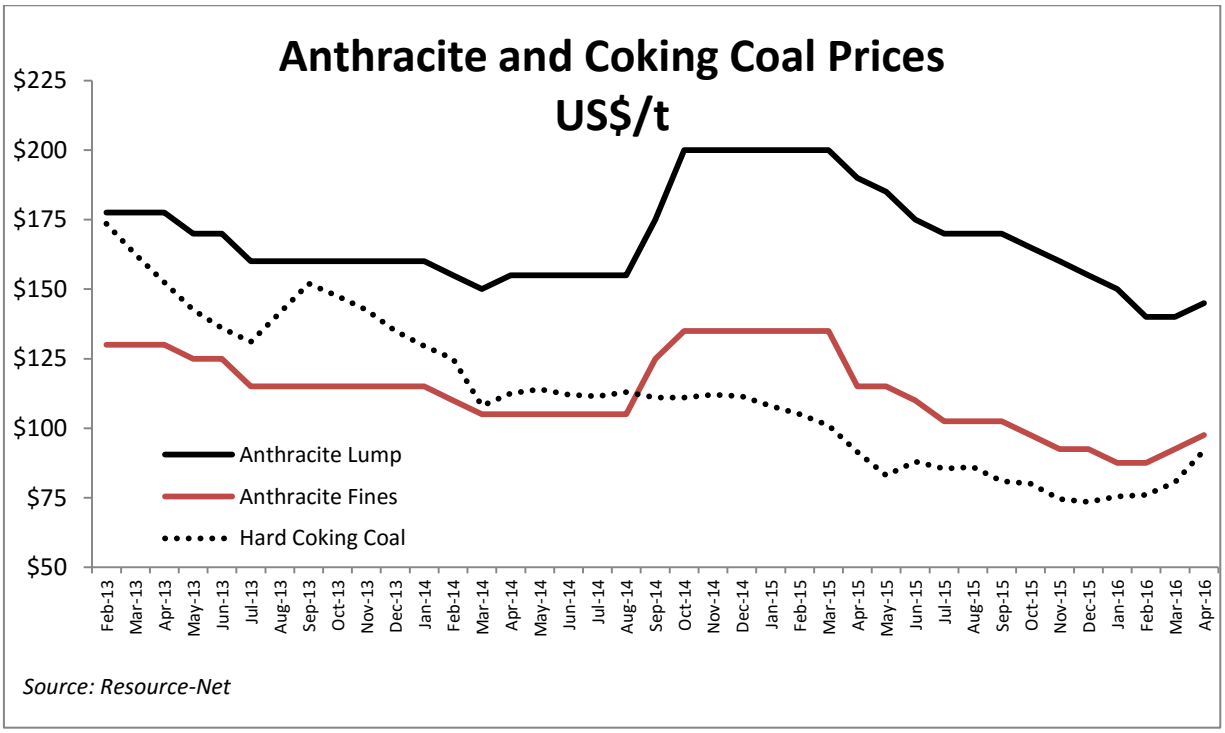


Figure 4. Historical Anthracite and Coking Coal Prices

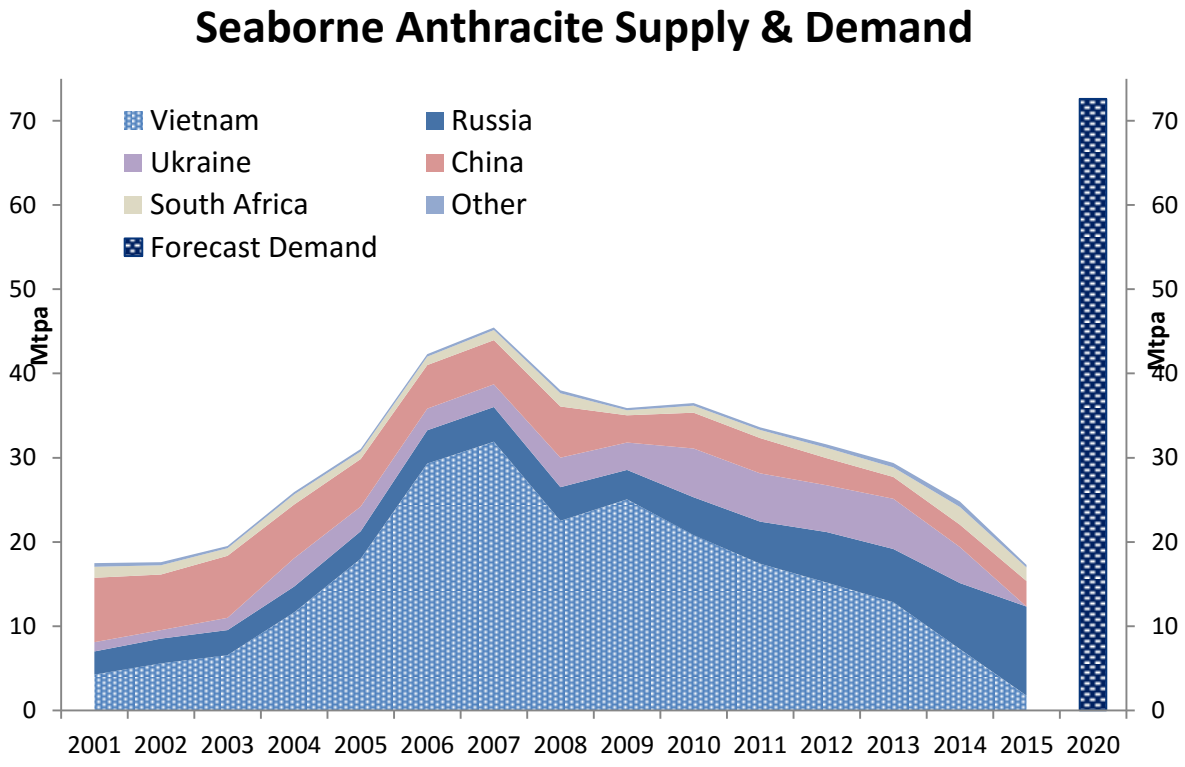


Figure 5. Global anthracite exports and 2020 demand forecast

## Speciality Anthracite Markets

Anthracite is not only used as a sinter feed and coke replacement in blast furnaces. Speciality markets include water filtration, electric arc furnaces, chemical production, plastics manufacture and the conversion of anthracite into synthetic graphite for electric vehicle batteries. According to recent research by Market/Markets and TechSci Research[4], the worldwide air filtration market is growing at 7.4% CAGR, and is forecast to grow from US$14.5b in 2015 to US$20.6B in 2020. Anthracite is used as one of the filter media in this market. Further, according to a 2014 report "Global Media Based Water Filters Market Forecast and Opportunities 2019"[5] the worldwide market for water filtration media is expected to exceed US$12b by 2018. Again, anthracite is a filtration media used in this market. Speciality anthracite markets are being investigated by the Company in some detail as, although volumes are small, pricing is typically much higher than in the steel sector and this can substantially increase the forecast returns of the smaller scale starter mine.

## Bulk Sample Operations Update

With the recent award of the Bulk Sample Permit (refer to ASX announcement 9 May 2016 "Atrum Coal receives Bulk Sample Permit for Groundhog North Mining Complex"), the Company is preparing for site operations to extract bulk samples for potential customers, primarily in Japan and Korea, although since the award of the permit, there has been strong interest from other carbon users for samples of Groundhog anthracite. The award of the Bulk Sample Permit and upcoming commencement of onsite activities represent a major milestone and phase change as the Company transitions from exploration to mining.

As part of the award of the Bulk Sample Permits, the Company is able to establish ground based site access to Groundhog, which has not been possible previously. The ground based access will aid in:

- reducing onsite costs;
- facilitating significant project equipment mobilisation; and
- establishing the production supply chain to the market place and customers

Initial construction, which includes ground based access to Groundhog North is planned to commence during the 2016 construction season, with bulk sample mining activities planned to immediately follow. Atrum will also be working with Aboriginal Groups and local communities in planning for participation in site construction and mining activities.

The Company has been preparing a development plan that outlines how anthracite mined under the Bulk Sample Permit will be transported offsite for processing and distribution to potential long-term

[4] Source: TechSci Research together with Markets and Markets
[5] Source: PR Newswire

customers in North America, Europe and Asia. Establishing the transportation route will allow Atrum to demonstrate its capability to develop a reliable and sustainable supply chain from the world's largest high grade / ultra-high grade anthracite deposit to Atrum's customers. Since the award of the Permit, the Company has fielded numerous enquiries from anthracite users around the world seeking samples for test purposes.

During this next phase of the project Atrum will evaluate the potential to supply Groundhog anthracite to specialty users in high-value markets, such as filtration media and activated carbon. The Company is also investigating the supply of upgraded anthracite products to industrial smelters, to users of calcined anthracite and to the rapidly growing markets for synthetic graphite. While the Company has maintained conservative pricing assumptions in all economic analyses, these high-value markets represent a genuine opportunity to achieve materially higher margins for custom washed and custom sized fractions of ultra-high grade anthracite.

## Competent Person Statement

The information in this announcement that relates to Mineral Resources were estimated in accordance with the guidelines set out in the JORC Code 2012 and are based on and fairly represents information and supporting documentation compiled and reviewed by Mr Nick Gordon, a Competent Person who is a full-time employee of Gordon Geotechniques Pty Ltd, who is a Member of the Australasian Institute of Mining and Metallurgy (CP Geotechnical: AustIMM Membership No. 229724) and a Registered Professional Engineer in Queensland (RPEQ).

With more than 29 years of experience in open cut and underground coal mining, Mr Gordon has sufficient experience that is relevant to the style and mineralisation and type of deposit under consideration to qualify him as a Competent Person as defined in the JORC Code 2012 Edition of the "Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves."

Neither Mr Gordon not Gordon Geotechniques Pty Ltd have any material interest or entitlement, direct or indirect, in the securities of Atrum or any companies associated with Atrum. Fees for the preparation of the report are on a time and materials basis.

Mr Gordon first visited the Groundhog North Complex area in March 2014 whilst exploration personnel were preparing the next drilling program. Two days were also spent with Atrum personnel in Victoria, British Columbia evaluating the geological, anthracite quality and geotechnical information relevant to the Groundhog North Complex project area.

Follow up visits to British Columbia were carried out in September and November 2014.

Mr Gordon consents to the inclusion in the report of the matters based on the information, in the form and context in which it appears.

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## Production Target

The Mineral Resources underpinning the production target for the starter mine have been prepared by a Competent Person in accordance with the requirements in Appendix 5A (JORC Code).

The Pre-Feasibility Study and the production target for the starter mine are based on the Measured, Indicated and Inferred Mineral Resources for the Western Domain of the Groundhog North Complex, comprising of 26% Measured resources; 32% Indicated resources; and 43% Inferred resources. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

## Forward Looking Statements

This release includes forward looking statements. Often, but not always, forward looking statements can generally be identified by the use of forward looking words such as "may", "will", "expect", "intend", "plan", "estimate", "anticipate", "continue", and "guidance", or other similar words and may include, without limitation statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs. Forward looking statements in this release include, but are not limited to, the capital and operating cost estimates and economic analyses from the Study.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the company's actual results, performance and achievements to differ materially from any future results, performance or achievements. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licences and permits and diminishing quantities or grades of resources or reserves, political and social risks, changes to the regulatory framework within which the company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward looking statements are based on the company and its management's good faith assumptions relating to the financial, market, regulatory and other relevant environments that will exist and affect the company's business and operations in the future. The company does not give any assurance that the assumptions on which forward looking statements are based will prove to be correct, or that the company's business or operations will not be affected in any material manner by these or other factors not foreseen or foreseeable by the company or management or beyond the company's control.

Although the company attempts to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be other factors that could cause actual results, performance, achievements or events not to be anticipated, estimated or intended, and many events are beyond the reasonable control of the company. Accordingly, readers are cautioned not to place undue reliance on forward looking statements.

Forward looking statements in this release are given as at the date of issue only. Subject to any continuing obligations under applicable law or any relevant stock exchange listing rules, in providing this information the company does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in events, conditions or circumstances on which any such statement is based.