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Atrum Coal
COAL FOR STEEL

ASX Release

8 January 2019

Elan South Hard Coking Coal Resource Increased by 170% to 97Mt

HIGHLIGHTS

- **Updated Elan South JORC Resource Estimate of 97 Mt (31 Mt Indicated and 66 Mt Inferred), representing an increase of 61 Mt from the 2017 estimate (36 Mt).**
- **This updated resource estimate is underpinned by the 2018 exploration program, consisting of 37 boreholes completed in three phases of drilling.**
- **The updated Elan South resource compares to the neighbouring Grassy Mountain project (Riversdale Resources) with a stated resource of 195 Mt (85 Mt Measured and 110 Mt Indicated).**
- **Detailed coal quality, washability and carbonisation testwork on Elan South samples is ongoing, with final results expected in the next several weeks. Initial results have supported previous preliminary coal quality work indicating high-quality hard coking coal parameters. These include relatively high theoretical yields with low ash, high CSN and low total sulphur and phosphorus values.**
- **Coupled with the Environmental Baseline Study started in June 2018, the updated resource and coal testwork results represent a substantial advancement of the high-quality Elan South hard coking coal deposit towards targeted development.**
- **Significant expanded drilling of Elan South is planned for the 2019 field program. This is set to target further JORC resource increases and upgrade the current resource classification.**
- **Elan South represents just one targeted development area at Elan. Updated JORC resource estimates for other areas within the Elan Coking Coal Project are expected later in January 2019.**

Registered Office
Unit 1B, 205-207 Johnston Street
Fitzroy, VIC 3065
T +61 3 9191 0135
E info@atrumcoal.com
www.atrumcoal.com

Board of Directors

Non-Exec Chairman	C. Blixt
Managing Director	M. Wang
Non-Executive Director	C. Fear
Non-Executive Director	G. Edwards
Non-Executive Director	J. Chisholm
Company Secretary	J. Stedwell

Key Projects

Groundhog	Ownership: 100%
Elan	Ownership: 100%
Bowron River	Ownership: 100%

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Atrum Coal Ltd ("**Atrum**" or the "**Company**") (**ASX: ATU**) is pleased to advise an updated JORC resource estimate for the Elan South deposit within its 100%-owned Elan Coking Coal Project in southwest Alberta, Canada.

Non-Executive Chairman, Charles Blixt, commented: *"We are very excited by the significant increase in the JORC resource estimate for our Elan South deposit. This increase was driven by Atrum's highly successful 2018 exploration program. The combined 97Mt of Indicated and Inferred resources has validated our belief that Elan South holds substantial hard coking coal resources.*

"We are equally encouraged by the initial results from the current detailed coal quality testwork program – confirming a low ash, high yield, low sulphur, hard coking coal. Both outcomes strongly reinforce Atrum's strategy of rapidly advancing Elan South towards potential development as a premium hard coking coal operation.

"Elan South represents just one targeted development area at Elan. Updated JORC resource estimates for other deposits within the Elan Coking Coal Project are expected in late January 2019. We also look forward to releasing the remaining detailed coal quality results upon expected completion in the coming weeks."

About the Elan Coking Coal Project and Elan South Area

The Elan Coking Coal Project is located in the Crowsnest Pass area of Alberta, Canada. It consists of several different project areas which are known to contain shallow emplacements of high quality hard coking coal of the Mist Mountain Formation (Kootenay Group). The Elan Project has a significant areal footprint comprising 27 coal exploration tenements spread over a 50 x 20 km zone and totalling approximately 22,951 ha.

Approximately 40km to the west of the Elan Project, Teck Resources Ltd operates five mines, in the same Mist Mountain Formation, producing approximately 25 Mt per annum of mostly hard coking coal for the global steel industry. Elan South hard coal seams correspond directly to those horizons of the same Mist Mountain Formation found in the Teck Resources' Hard Coking Coal mines.

The Elan South Area forms the southern part of the broader Elan Project tenement holding. Elan South is approximately 13 km north of Coleman and Blairmore where an existing rail line operated by Canadian Pacific Railway is located, providing direct rail access to export terminals in Vancouver and Prince Rupert.

Elan South shares its southern boundary with Riversdale Resources' flagship Grassy Mountain Project, which is in the final permitting stage for a 4.5 Mtpa open cut operation producing hard coking coal. The current Grassy Mountain resource estimate is 195 Mt, with 85 Mt in Measured and 110 Mt in Indicated classification (see Riversdale Resources' Annual Report 2018).

Atrum Coal Ltd ACN 153 876 861 – Unit 1B, 205-207 Johnston Street Fitzroy, VIC 3065 **T** +61 (0) 3 9191 0135 **E** info@atrumcoal.com
www.atrumcoal.com

Private Australian company, Hancock Prospecting, acquired 19.99% of Riversdale Resources in August 2018 for A$68.9 million cash. In September 2018 it then maintained that percentage equity holding by investing another A$30.4 million cash via anti-dilution rights. This total investment of A$99.3 million (for a 19.99% equity interest) effectively values Riversdale Resources at approximately A$500 million.

2018 Exploration Program at Elan South

Atrum's 2018 exploration program at Elan focused on Elan South (where Elan Coal Ltd had previously drilled seven exploration boreholes in 2014). Atrum completed the following work in 2018, with cumulative metres drilled totalling 6,900m:

- Detailed surface mapping for coal outcrops and geology features
- 7 trenches
- 12 reverse circulation boreholes
- 20 percussion or 'rotary air blast' boreholes
- 4 large diameter (150mm) cored holes and 1 PQ size cored hole

All boreholes were geophysically logged by Century Wireline Services with a suite of tools including natural gamma, caliper, long and short spaced density, resistivity and deviation. The geophysical logging is important to assist in geological interpretation of coal seam intervals, and to account for the deviation in boreholes. Figure 1 shows the 2018 drillhole locations.

Coal seams are also exposed in road cuttings for drilling access tracks and provide a good illustration, and additional geological information, of the structure and apparent coal thicknesses (see Figures 2 and 3).

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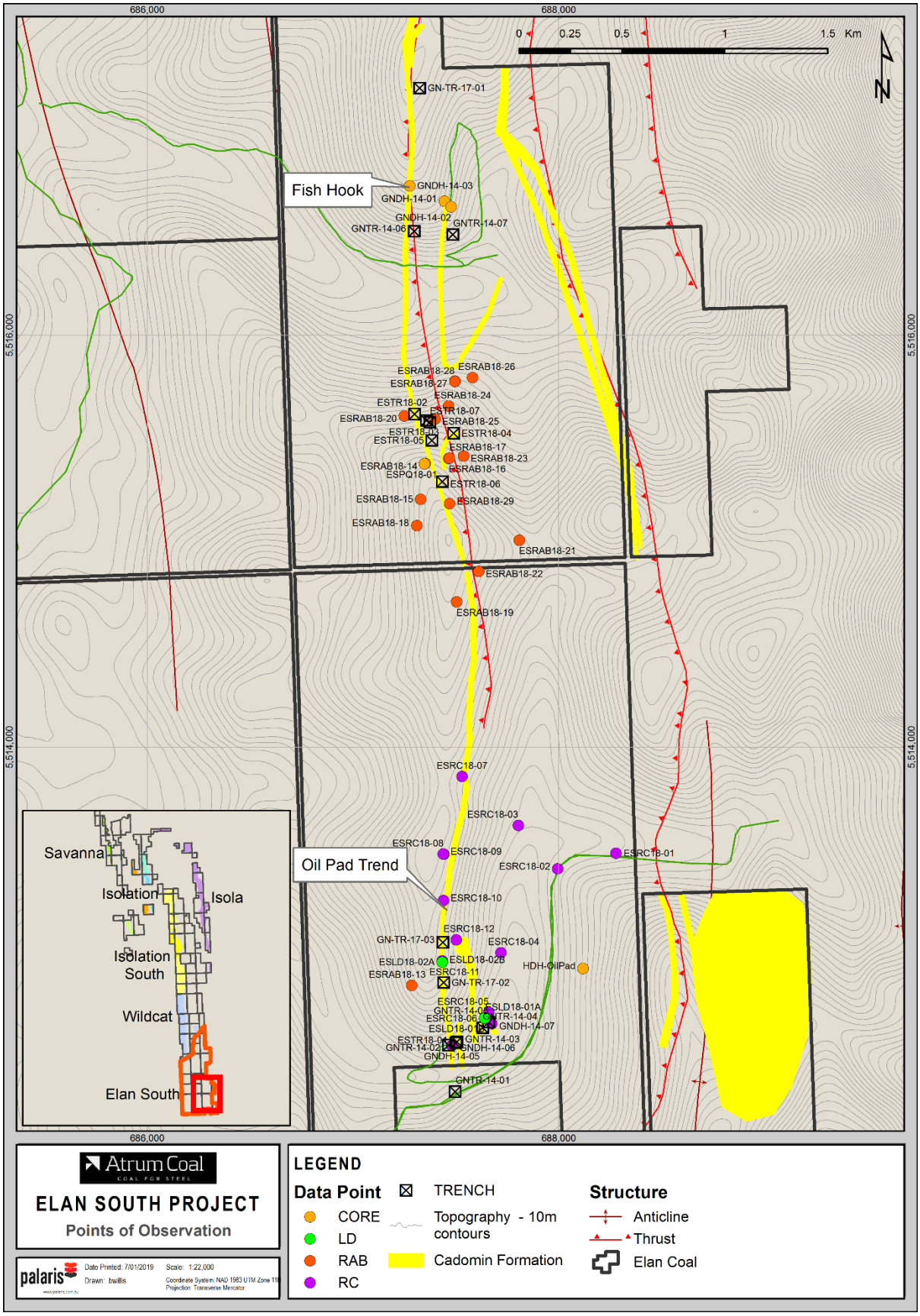

Figure 1. Elan South borehole locations

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Figure 2. Road cutting in anticline structure at the southern end of Elan South near ESRC-18-06

Figure 3. Road cutting in anticline structure at northern end of ridge

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Elan South Geology

The 2018 exploration results have significantly improved the understanding of the structural geology of the Elan South deposit in the target areas that are generally characterized with thrust faults, anticlines and synclines, and contain a number of areas with shallow coal.

On the central-western side of the ridgeline, the coal seams are inclined westward on the upthrust zone of the major thrust fault. On the eastern side of the ridge, exploration drilling and surface mapping have identified that the seams are again uplifted toward the surface through the nose of an anticline structure, known as the Fish Hook Anticline.

This type of structural setting is quite common for this region of the Crowsnest Coalfield, including within the nearby operating metallurgical coal mines. A combination of detailed surface mapping and drilling information has helped identify areas where the coal seams of the Jurassic-Cretaceous Mist Mountain Formation (Kootenay Group) occur at depths potentially amenable to open cut mining and contour / highwall mining. The coal seam and structural geology information has been used by Palaris in the development of an updated geological model which underpins the updated JORC resource estimate for Elan South.

Typical cross-sectional views of the geological structure are shown in Figures 4 and 5.

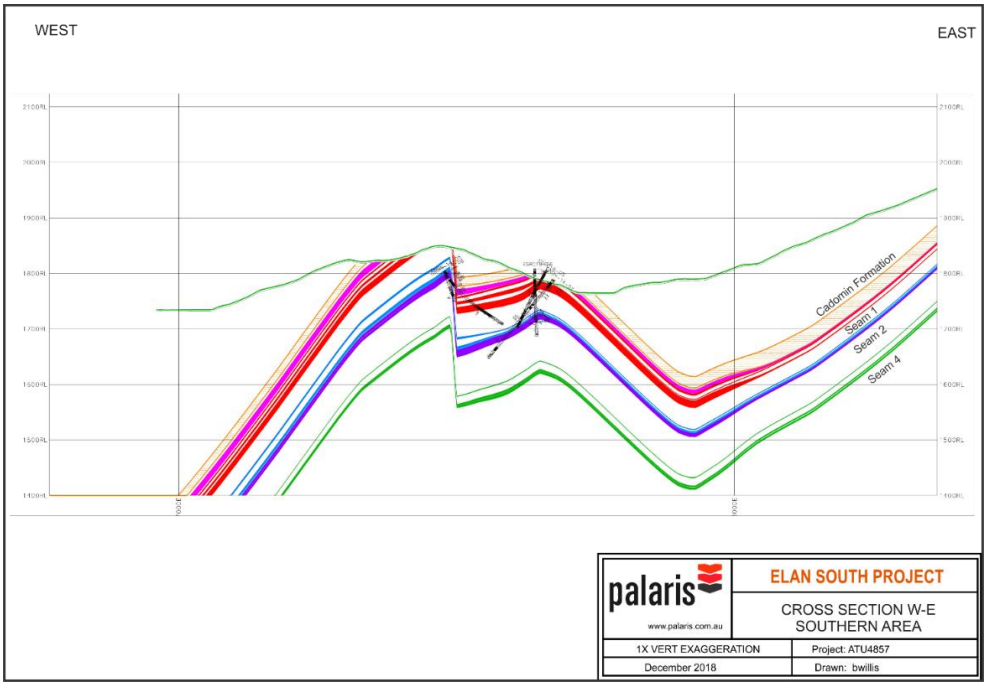

Figure 4. Cross section – southern area

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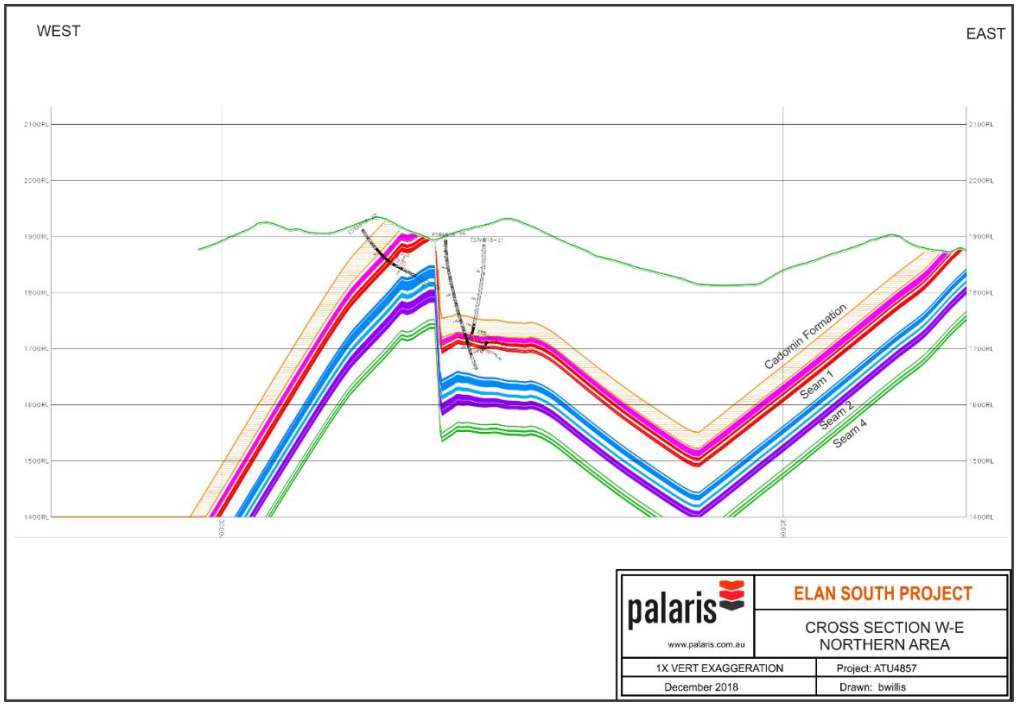

Figure 5. Cross section – northern area

Target Seams

The coal seams at the Elan South deposit are located within the Mist Mountain Member of the Kootenay Group, and are of Cretaceous age. The target seams of the Mist Mountain Formation are in three seam groups, namely Seam 1 at the top of the sequence, then Seam 2, and finally Seam 4 at the base. The coal seams at Elan South are directly correlatable with the coal seams at Riversdale's Grassy Mountain project, having very similar attributes according to their geophysical (and physical) attributes. These coal seams were previously mined at Grassy Mountain in an open cut operation from an area approximately 5km south of the Elan South project.

Seam 1

Seam 1 is essentially a package of coal seams, typically consisting of four to six coal plies with an aggregate thickness up to 10m, within a stratigraphic interval up to 20m thick. The Seam 1 coal plies are separated by carbonaceous claystone and siltstone partings that can be correlated, while the coal plies can show considerable variation in thickness and number of splits. The main coal intervals with Seam 1 are, in descending stratigraphic order, the S1C, S1B/S1BL and S1AU/L coal plies.

Seam 2

Seam 2 can be characterised by a single coal seam generally between 5 and 15m thick. Seam 2 is separated by 25 – 40m of interburden material below Seam 1. Seam 2 develops an upper seam referred to as S2B, which also develops upper and lower splits known as S2BU and S2BL.

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Seam 4

Seam 4 is generally represented by three coal plies, correlated as S4C, S4B and S4A, overlying hard siliceous sandstones of the Moose Mountain Member. The Seam 4 coal plies are often 1m to 3m each in thickness, but poorly represented in the Elan South data set to date. This is due to Seam 4 occurring at greater depths of cover and boreholes often stopped short of reaching the seam.

Data and Modelling

The 2018 exploration program was planned and managed by Atrum following industry protocols for such type of work. This includes use of independent third-party specialty contractors for drilling, geophysical logging and lab testing.

A 3D geological model has been constructed using Dassault Systems Geovia Minex modelling software. The co-ordinate system used for geological modelling and GIS systems is the NAD1983 Universal Transverse Mercator (UTM), Zone 11N. The structural model was created using the borehole collar data and seam intersections compiled in the Minex borehole database, based on the geological data provided by Atrum. The collaborative approach between Atrum Coal and Palaris provided significant confidence in the development of the geological model.

JORC Resources

Updated Elan South coal resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code), 2012 Edition. This report is accompanied by the JORC Code (Edition 2012) *Table 1- Checklist of Assessment and Reporting Criteria*. The updated Elan South resource estimate (as at 31st December 2018) totals 97 Mt, of which 31.3 Mt is classified as Indicated and 66 Mt as Inferred. The Elan South resource estimate is summarised in Table 1 below and graphically illustrated in Figure 6.

Table 1. Elan South Coal Resources (at 31st December, 2018)

Seam Group	Sub-Seam	Indicated	Inferred	TOTAL
Seam 1	S1C	6.1	9	15.0
	S1CL	0.5	2	2.3
	S1B	1.1	3	4.3
	S1AU	4.6	4	8.4
	S1AL	8.2	7	14.9
Seam 2	S2BU	-	5	4.6
	S2B	1.1	9	9.9
	S2BL	-	2	1.7
	S2AU	4.4	10	14.8
	S2AL	5.3	12	16.8
Seam 4	S4A	-	1	1
	S4B	-	3	3.2
	S4C	-	1	1
Grand Total		**31.3**	**66**	**97**

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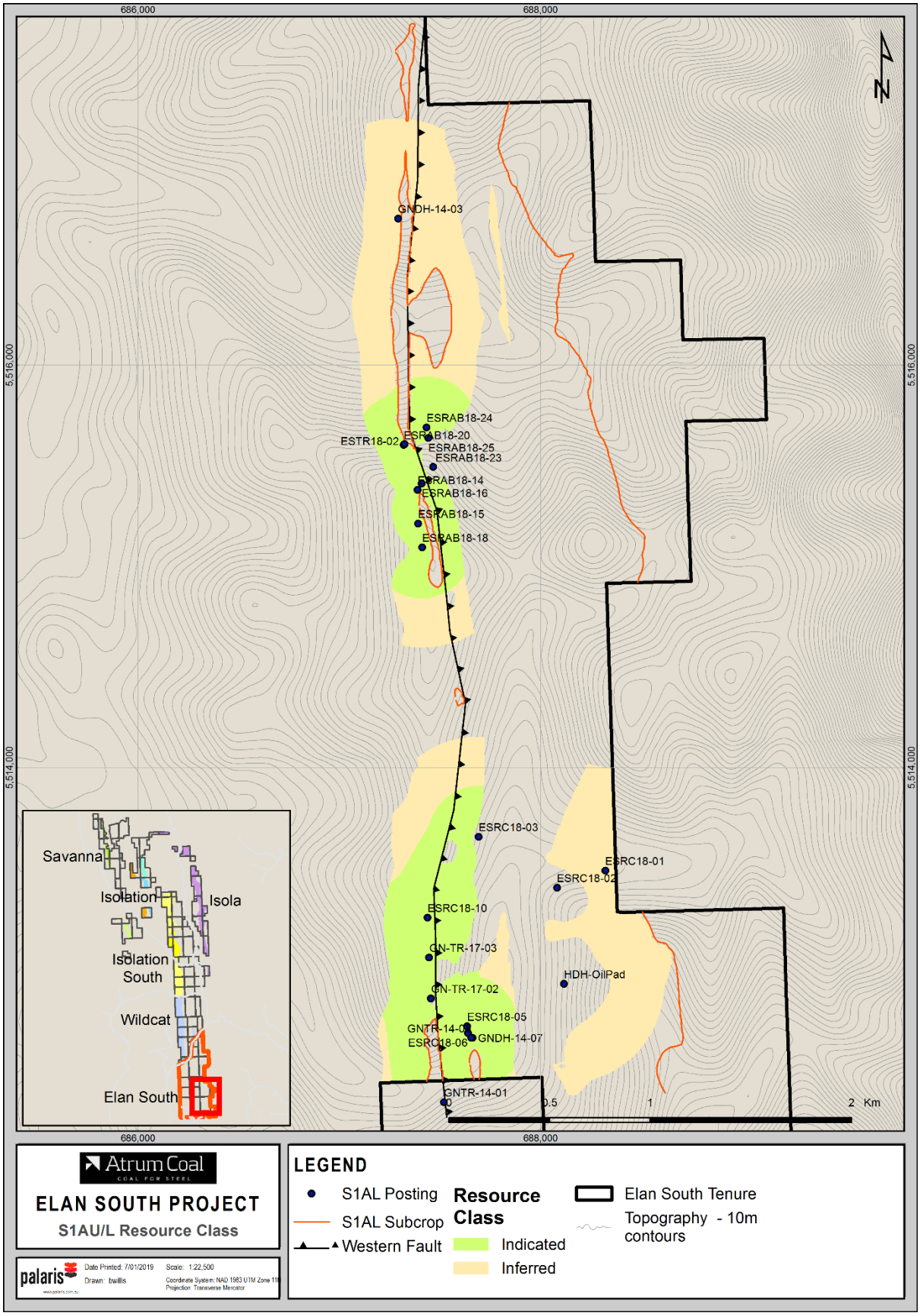

Figure 6. Resource classification (Seam 1AU/L)

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Coal Quality

The Cretaceous aged coal seams of the Mist Mountain Formation (Kootenay Group) at Elan South are generally low to moderate in raw ash, with low total sulphur and phosphorus levels.

The coal rank, as exhibited by vitrinite reflectance, appears to increase northward ranging from 1.07 – 1.19% in the south up to 1.27 – 1.39% in the northern Cat Mountain area (see Figure 7).

Previous work has indicated high potential for medium to low volatile hard coking coal products. Preliminary clean coal quality testing suggests the coal will wash to 7 – 10% product ash, with consistently low total sulphur and moderate to high swell FSI / CSN of 4 to 7.5.

A detailed coal quality, washability and coke characterisation testing program is ongoing. Initial results from this program are provided in Tables 2 and 3 below.

Full results from the current program will be reported following its expected completion in the next few weeks.

Table 2. Partial initial LD core coal quality (ad) from 2018 program

BOREID	LAB #	FROM	TO	IM %	ASH %	VM %	FC%	FSI
ESLD18-01B	ESLDC18-COMP-04	19.46	22.52	0.7	22.3	20.6	56.4	4
ESLD18-01B	ESLDC18-COMP-05	22.52	26.73	0.7	5.6	25.6	68.1	6
ESLD18-01B	ESLDC18-COMP-06	26.83	32.84	0.8	10.8	24.0	64.4	5

Table 3. Preliminary LD clean coal results at CF1.45 (ad) from 2018 program

BOREID	LAB #	Yield%	IM %	ASH%	VM %	TS %	FSI	Max Fluidity (ddpm)
ESLD18-01B	ESLDC18-COMP-04	54.18	0.6	9.5	24.5	0.7	5.5	555
ESLD18-01B	ESLDC18-COMP-05	96.37	0.56	5.0	26.3	0.73	7.5	1,453
ESLD18-01B	ESLDC18-COMP-06	85.39	0.6	6.2	25.1	0.71	7	1,770

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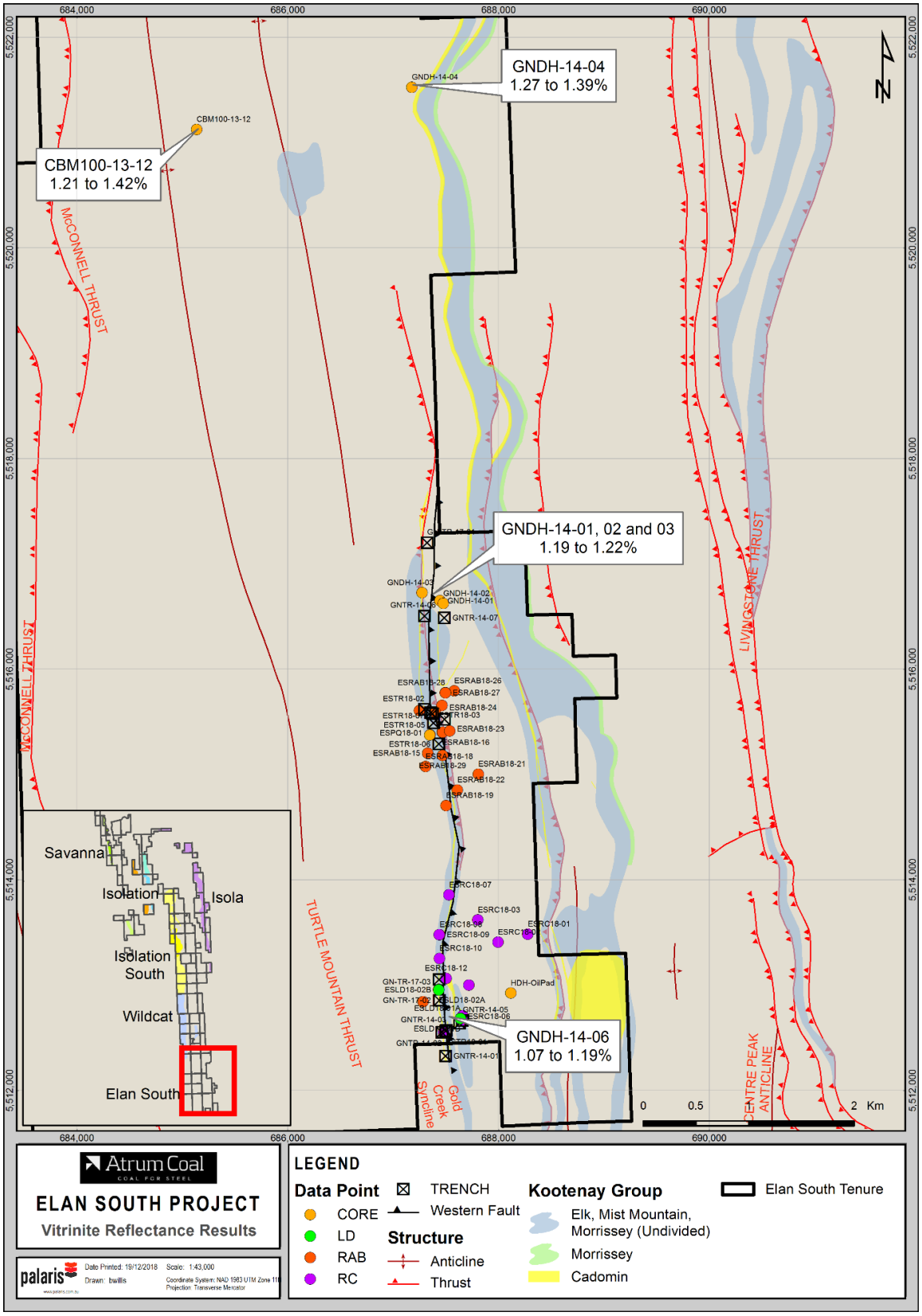

Figure 7. Elan South vitrinite reflectance (R_oMax %)

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Exploration Target

This Elan South JORC resource review has identified several prospective but underexplored target areas that will be investigated in future exploration campaigns by Atrum – Eastern Elan South, Central Ridge and Cat Mountain (refer Table 4 and Figure 8).

An Exploration Target range of 70 to 320 Mt has been provided for these areas. The potential quantity and quality of the Exploration Targets are conceptual in nature. Insufficient exploration has been undertaken to estimate a Mineral Resource and it is uncertain that further exploration will result in the estimation of a Mineral Resource.

Exploration planning for the 2019 exploration program is continuing, with Eastern Elan South identified as the primary exploration target area, with additional boreholes expected in the Central Ridge and Cat Mountain.

Table 4. Elan South Project Exploration Target ranges

Exploration Targets	Exploration Target Range (Mt)	Strike Length km	Rank Range (R_oMax %)	Grade Range (raw ash %)
Eastern Elan South	30 - 120	6 km	1.07 - 1.30	10 - 35
Central Ridge	10 - 50	1.6 km	1.20 - 1.30	10 - 35
Cat Mountain	30 - 150	5 km	1.25 - 1.42	10 - 35
TOTAL	**70 - 320**			

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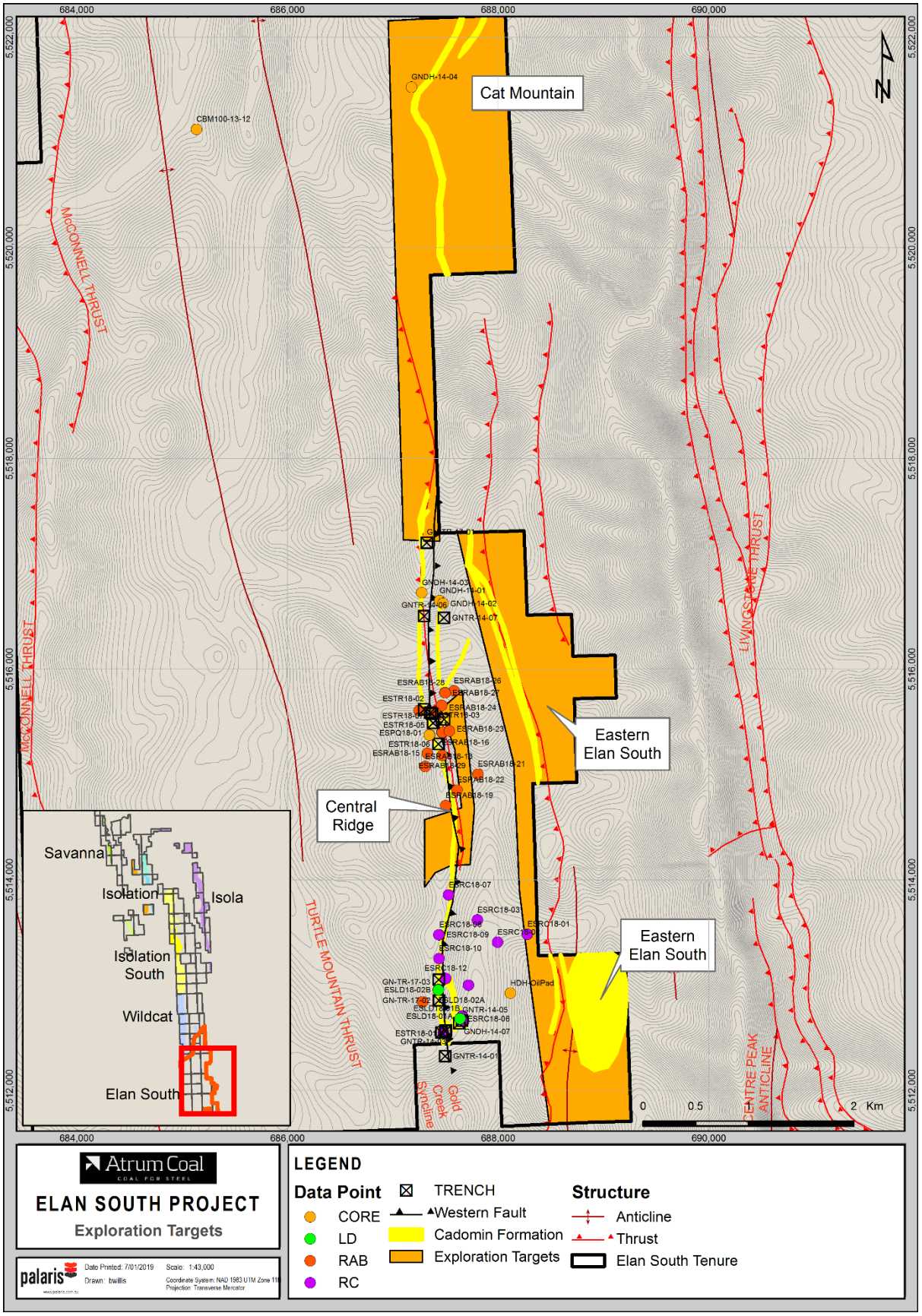

Figure 8. Elan South Exploration Target Areas

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For further information, contact:

Max Wang
Managing Director/CEO
M +1 403 973 3137
mwang@atrumcoal.com

Justyn Stedwell
Company Secretary
P +61 3 9191 0135
jstedwell@atrumcoal.com

Michael Vaughan
IR Advisor, Fivemark Partners
P +61 422 602 720

Competent Persons Statement

The information in this document that relates to reporting of Mineral Resources for the Elan South project area is based on, and fairly represents, information and supporting documentation prepared by Mr Brad Willis, who is a Member of the Australasian Institute of Mining and Metallurgy (#205328) and is a full-time employee of Palaris Australia Pty Ltd.

Mr Willis has read and understands the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Exploration Targets, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition). Mr. Willis is a Competent Person as defined by the JORC Code, 2012 Edition, having twenty years' experience that is relevant to the style of mineralisation and type of deposit described in this document.

Neither Mr. Willis nor Palaris Australia Pty Ltd has any material interest or entitlement, direct or indirect, in the securities of Atrum or any companies associated with Atrum. Fees for the preparation of this report are on a time and materials basis. Mr. Willis has visited the Elan project site with Atrum coal personnel during September, 2018 during the current exploration program.

The JORC Code (2012) Table 1 – Reporting of Exploration Results

Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary

Sampling techniques	▪ *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*
	▪ *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*
	▪ *Aspects of the determination of mineralisation that are Material to the Public Report.*
		▪ Sampling has been undertaken on the following borehole types:
		  ▪ 11 reverse circulation (RC) holes
		  ▪ 20 percussion (rotary air blast) holes
		  ▪ 1 HQ (63mm) size cored holes
		  ▪ 3 PQ (85mm) size cored holes
		  ▪ 4 LD (150mm) cored holes
		  ▪ 1 CSG well (mixture of core and cuttings)
		▪ Samples were taken on ply intervals and composited in the laboratory
		▪ Core recoveries were recorded and cumulative tallies kept – achieving good core recoveries has been difficult due to the fractured and friable nature of the coal seams. Driller experience in coal may have been part of the issue in the 2014 program
		▪ The latest LD program achieved high core recoveries and appears to be a more suitable coring technique for this type of coal
		▪ All holes have been geophysically logged with sample intervals adjusted and aligned to the geophysical log depths

Drilling techniques	▪ *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard*	▪ The types of boreholes completed are listed above ▪ PQ and HQ size cored holes used triple tube core barrels while the LD coring was double

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Criteria	JORC Code explanation	Commentary
	tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	tubed. The double tubed LD coring provided better core recoveries ▪ All of the boreholes completed in 2014 and 2018 were geophysically logged to total depth in the open hole ▪ Trenching has also been utilised but is considered as a lower confidence data point relative to drill holes
Drill sample recovery	▪ *Method of recording and assessing core and chip sample recoveries and results assessed.* ▪ *Measures taken to maximise sample recovery and ensure representative nature of the samples.* ▪ *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	▪ Core recoveries were recorded and cumulative tallies kept – achieving good core recoveries has been difficult due to the fractured and friable nature of the coal seams ▪ The latest LD program achieved high core recoveries and appears to be a more suitable coring technique for this type of coal ▪ Samples were weighed at the testing laboratory and compared against calculated volumetric recovery. ▪ Boreholes were mostly geophysically logged to ensure recovered core lengths are representative of the full seam ▪ The coal has a high HGI and can be heavily fractured; core losses are likely to result in losses of fines and / or vitrinite rich material
Logging	▪ *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* ▪ *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* ▪ *The total length and percentage of the relevant intersections logged.*	▪ Core samples were logged in detail including lithology, brightness, sedimentary features and defects ▪ Open hole cuttings (RC and rotary air blast) are logged in 0.5m sample intervals taken ▪ Boreholes were usually logged with geophysical sondes including density, caliper and gamma, deviation and dipmeter ▪ Core sample photographs are taken on all core runs and kept on file for reference ▪ Trenches were logged and sketched in detail ▪ Geotechnical logging, sampling and testwork is yet to be undertaken
Sub-sampling techniques and sample preparation	▪ *If core, whether cut or sawn and whether quarter, half or all core taken.* ▪ *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* ▪ *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* ▪ *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* ▪ *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* ▪ *Whether sample sizes are appropriate to the grain size of the material being sampled.*	▪ Different testing protocols were used between various exploration campaigns ▪ Core and RC samples were typically crushed to – 12.5mm mesh and subsampled for raw coal analyses. Ply samples were composited on Atrum's instructions in the lab. ▪ Clean coal composites have been prepared at various cutpoints including CF1.40 CF1.45, CF1.50 (and CF1.58 for CSG well samples) ▪ Some of the 2014 samples were separated by size fraction (0.25mm) with froth flotation on fines. ▪ Sub-sampling techniques used are commonly adopted in the coal industry and are not expected to result in non-representative raw or clean coal samples
Quality of assay data and laboratory tests	▪ *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* ▪ *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*	▪ Testwork is undertaken by a nationally accredited laboratory (GWIL Birtley of Calgary), generally to ASTM standards. The lab participates in International Canadian Coal Laboratories Round Robin series (CANSPEX) and test results are consistently ranked in preferred groupings. ▪ The Competent Person undertook a site visit and tour of the GWIL Birtley laboratory in 2018 ▪ Raw coal quality testing is fairly primitive and involved proximate analyses, TS and FSI. ▪ RD or ARD is not routinely tested and should be

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Criteria	JORC Code explanation	Commentary
	▪ *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	included in further testing ▪ Some of the compositing of individual ply RC/chip samples was done without any testwork being undertaken on the individual samples. This has resulted in some composites tested having high ash contents that are not considered representative ▪ Sizing and float sink testing is being undertaken on LD samples according to testing protocols designed by metallurgical consultants A&B Mylec
Verification of sampling and assaying	▪ *The verification of significant intersections by either independent or alternative company personnel.* ▪ *The use of twinned holes.* ▪ *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* ▪ *Discuss any adjustment to assay data.*	▪ Geological data is collected in line with Atrum Coal's exploration procedures and guidelines ▪ Sample interval depths and thicknesses are as measured by the field geologist (drillers depths), and adjusted to align with geophysical log depths ▪ GWIL Birtley undertakes preliminary checks of assay data using regression analysis, and checked by Atrum Coal and Palaris geologists ▪ All data has been encoded, collated and cross checked by Dahrouge Geological Consulting, and later by Palaris ▪ Twinned holes have been used for the LD program. The twinned holes also incorporate geophysical logging
Location of data points	▪ *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* ▪ *Specification of the grid system used.* ▪ *Quality and adequacy of topographic control.*	▪ The 2018 surveyed locations of boreholes and trenches have been surveyed using DGPS (Trimble) ▪ The co-ordinate system is UTM projected grid NAD83 Zone 11N ▪ The topographical surface is sourced from a LiDAR survey and has a reasonable correlation with borehole collars. The 2014 boreholes were reportedly surveyed by hand held GPS and may have limited accuracy
Data spacing and distribution	▪ *Data spacing for reporting of Exploration Results.* ▪ *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* ▪ *Whether sample compositing has been applied.*	▪ The majority of sites have coal quality information from core, RC or chip samples, and are point of observation for coal quality determination ▪ Grade continuity is quite variable between data points. The borehole spacings used and rationalisation of resource classification polygons has defined resources with geological confidence are mostly Inferred status and reflects the level of confidence of historical borehole data ▪ The Indicated resource areas in Isolation South may be suitable for conceptual mine planning ▪ Sample compositing is undertaken in the geological model, weighted by thickness (constant RD of 1.40 was applied due to the absence of RD data). Seam compositing requires 60% linear recovery as specified in the Minex BHDB settings
Orientation of data in relation to geological structure	▪ *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* ▪ *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	▪ Boreholes have been drilled either vertically or inclined. Inclined boreholes are used in areas where dipping seams exist, in order to intersect the seams closer to their true thickness ▪ Almost every borehole has electronic deviation data available that has been imported into the Minex borehole database. The geological modelling software captures the borehole inclination and deviation, and structural modelling assists in correcting the apparent seam thicknesses to true thicknesses in model grids ▪ Boreholes tend to be accumulated near the

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Criteria	JORC Code explanation	Commentary
		subcrop zones but occasional boreholes are located in the down dip zones in order to provide 3D representation. ▪ Trend surfaces are used in modelling to ensure consistent seam dips exist and to continue seams to depth according to realistic seam dips
Sample security	▪ *The measures taken to ensure sample security.*	▪ Core was sampled, labelled and bagged before being submitted to the testing laboratories Samples have a unique sample number that is provided on tags in the bag, outside the bag and in separate digital and hard copy sample advice. Each item of advice lists project name, borehole, top and base of sample and sample number ▪ The laboratory records provided include sample identification numbers and weighed sample mass ▪ As the exploration was undertaken a long time ago, it is difficult to confirm whether measures to ensure sample security represented best practice by today's standards
Audits or reviews	▪ *The results of any audits or reviews of sampling techniques and data.*	▪ Reviews by Elan Coal and metallurgical consultants have been undertaken and recognised the shortcomings of the 2014 program with regard to core recovery issues ▪ Metallurgical consultants have been involved in the sampling and testing protocols for the 2018 LD program

Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	▪ *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* ▪ *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	▪ The coal leases were granted to Elan Coal Ltd in 2012/13, Elan Coal was acquired by Atrum Coal in March 2018. Coal Lease agreements provide the right to exclusively explore the land within the boundaries of the lease and are granted for a term of 15 years (with an option to extend at expiry) ▪ The Property falls within the Rocky Mountain Forest Reserve, which is managed by the Alberta Government ▪ The project is located in an area that has been classified as Category 2 in accordance with the Coal Development Policy for Alberta. Surface mining is not traditionally considered in Category 2 areas either because it is an area where infrastructure is inadequate to support mining activities or it is an area associated with high environmental sensitivity
Exploration by other parties	▪ *Acknowledgment and appraisal of exploration by other parties.*	▪ During the late 1940s and early 1950s, Western Canadian Collieries undertook dozer assisted surface geological mapping of the Elan South area which resulted in 16 recorded outcrop sections. ▪ Northstar Energy Corporation drilled four HQ (63.5mm core) Coal Bed Methane gas wells within the Project boundaries in 2001. These holes targeted the deeper coal seam occurrences and are useful in establishing the regional structural interpretation at depth. All holes were geophysically logged and some limited coal quality data is also available. ▪ In 2014, Elan Coal in partnership with Kuro Coal completed 4 PQ/HQ boreholes, 3 RC open holes and 7 costean trenches. The exploration was principally conducted in two Elan South areas proximal to prospective areas identified by the earlier Western Canadian Colliers Mapping. The 2014 PQ/HQ Drilling

Atrum Coal Ltd ACN 153 876 861 – Unit 1B, 205-207 Johnston Street Fitzroy, VIC 3065 **T** +61 (0) 3 9191 0135 **E** info@atrumcoal.com
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Criteria	JORC Code explanation	Commentary
		program completed a total of 454 meters in four holes. Thirty-three coal samples were collected and later composited into logical seam units in accordance with the geophysical logs for each hole. Coal recovery was poor ranging from a low of 7% to a high of 90% for the identified seam groups. ▪ In 2017 Atrum Coal supervised a limited exploration program consisting of three trenches and field mapping.
Geology	▪ *Deposit type, geological setting and style of mineralisation.*	▪ The Jurassic-Cretaceous Mist Mountain Formation (Kootenay Group), which contains the major coal deposits in the Front Ranges of south eastern British Columbia and south western Alberta, was deposited within a broad coastal plain environment as part of a north- to northeast-prograding clastic wedge along the western margin of the Jurassic epicontinental Fernie Sea during the first of two major episodes of the Columbian Orogeny. ▪ The Mist Mountain Formation consists of interbedded sandstone, siltstone, mudstone and coal up to 1000 m thick and is interpreted as deltaic and/or fluvial-alluvial-plain deposits. Regionally, economically important coal seams occur throughout the succession. Regionally, the seams are up to 18 m thick and vary in rank from south to north, from high volatile bituminous to semi-anthracite. Progressive south to north changes in depositional environments causes the Mist Mountain Formation to grade into the contemporaneous but mainly coal-- Nikanassin Formation to the north of Clearwater River ▪ The Mist Mountain Formation at Elan South contains a multi-seam resource consisting of a cyclic succession of carbonaceous sandstone, mudstone, siltstone, coal, and some conglomerate. This formation is directly overlain by the massive Cadomin Conglomerate which is a readily recognizable marker horizon throughout the area. The Cadomin Formation, a resistant, chert-pebble conglomerate up to about 100 m thick (although generally much thinner). The Cadomin Formation is overlain by continental deposits consisting of interbedded dark mudstone, siltstone and sandstone of the Gladstone Formation (Blairmore Group). ▪ There are at least three major coal horizons in the Mist Mountain formation at Elan South. The uppermost No. 1 Seam occurs immediately below the Cadomin and ranges in thickness from 1 m to 4 m. The No. 1 Seam may be eroded by the overlying conglomerate in some places. The thick No. 2 Seam is typically 35 m below the No. 1 and the ranges in thickness from 5 m to 15m. The lower No. 4 Seam is typically 30 m below the No. 2 and consists of multiple coal plies up to 1m thick with in rock parting material. These seams were mined on the Grassy Mountain open pit mine which 5km to the south of the Project. ▪ Tectonic deformation of coal measures is the major factor that controls the present areal extent, thickness variability, lateral continuity, and geometry of coal beds at Elan South. The strata is characterized by broad upright to overturned concentric folds, cut and repeated by major to minor thrust and tear faults, and late extensional faults. Extensive shearing and structural thickening and thinning of coal beds in the cores of flexures are common in highly deformed regions.
Drill hole Information	▪ *A summary of all information material to the understanding of the exploration results including a tabulation of the*	▪ Geological data points incorporated into the geological model has been included in the Appendices

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Criteria	JORC Code explanation	Commentary
	following information for all Material drill holes: o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.*	
Data aggregation methods	▪ *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* ▪ *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* ▪ *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	▪ For RC samples tested, individual samples are taken at 0.5m sample increments ▪ Individual samples were combined into seam composite samples for analytical testing at GWIL Birtley coal laboratory ▪ No cut-off grades were applied to the resource estimate, as coal seams of the Mist Mountains require processing in southern BC and Alberta ▪ Coal quality values accompanying the resource estimate are composited using thickness and density, and coal quality variables are weighted against resource tonnes when estimating the resource
Relationship between mineralisation widths and intercept lengths	▪ *These relationships are particularly important in the reporting of Exploration Results.* ▪ *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* ▪ *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	▪ Discrepancies between apparent and true seam thickness are an important consideration for interpretation of the drilling results due to dipping seams and inclined boreholes ▪ Borehole deviation is addressed through use of electronic borehole deviation survey data, and structural interpretation / fault modelling, correcting apparent dips to true ▪ Reported seam intersections in boreholes and as evidenced by seam outcrops (road cuttings) show evidence of fault thickening, and / or thickening through folded zones
Diagrams	▪ *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	▪ Borehole location maps, geological maps, cross sections, seam floor structure maps are provided in the JORC report and this announcement
Balanced reporting	▪ *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	▪ All coal quality results for RC and core sample testing has been provided in the report, and a summary within this announcement ▪ Sampling and testing of chip (rotary air blast) samples is considered to be less reliable and selected results are presented. Composite samples with raw ash >40% are considered non-representative and are not reported ▪ The coal quality results are within the range of expected values for Mist Mountain Formation coals
Other substantive exploration data	▪ *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical*	▪ Geophysical surveys (i.e. gravity, magnetic or seismic) have not been undertaken at Elan but will likely be utilised in future programs ▪ Atrum Coal geologists have undertaken a significant surface mapping program in 2018, collecting data points from outcrops of the Blairmore Group and

Criteria	JORC Code explanation	Commentary
	survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	Cadomin Formation, coal seams of the Mist Mountain Formation ▪ Road and track cuttings have provided a very useful source for outcrop measurements ▪ No geotechnical and geochemical testing of overburden or interburden material has been undertaken at this stage ▪ Metallurgical test results are presented in Section 5.2 of this report
Further work	▪ *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* ▪ *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	▪ The LD cores acquired in November 2018 are being subjected to detailed sizing and washability test work, including comprehensive testing of clean coal composites and coke strength testing ▪ After the winter of 2018/19, Atrum intends to re-commence exploration in some of the other Elan South project areas in 2019. An exploration program is currently being designed ▪ Exploration Targets have been identified and are presented in Section 7 of this report

Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	▪ *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* ▪ *Data validation procedures used.*	▪ Geological data was collated by Atrum Coal, who undertook validation checks on each hole before they were finalised ▪ Geological data has been cross checked by Palaris and used in the construction of geological models ▪ Some historical data is relied upon and assumes that the original acquisition and management of data is sound ▪ Borehole seam profiles with lithology, seam intervals and coal quality results are produced to check validity of data ▪ Coal quality data points are checked for outliers and any potential anomalies are omitted
Site visits	▪ *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* ▪ *If no site visits have been undertaken indicate why this is the case.*	▪ The Competent Person has undertaken a site visit to the Elan project in September, 2018 to inspect the site and drilling progress at Elan South, and to ensure alignment between Atrum Coal's geological data and Palaris' modelling and resource estimation processes ▪ The visits have been in relation to exploration assistance, geological modelling, and assisting with data QA/QC for model updates, and JORC resource estimates
Geological interpretation	▪ *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* ▪ *Nature of the data used and of any assumptions made.* ▪ *The effect, if any, of alternative interpretations on Mineral Resource estimation.* ▪ *The use of geology in guiding and controlling Mineral Resource estimation.* ▪ *The factors affecting continuity*	▪ Confidence in the geological data is considered moderate, based on the level of structural complexity in the deposit ▪ Correlations can be difficult, especially where seams are fault thickened or affected. Seam correlation has been a joint exercise between Atrum Coal and Palaris ▪ Coal seam correlations have been cross checked by geophysical logging and identifying characteristic signatures, which decreases the chance of miscorrelation. It is recommended that vitrinite reflectance be undertaken on core and chip samples to assist in seam correlation

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Criteria	JORC Code explanation	Commentary
	both of grade and geology.	▪ Control of the coal seams at depth is limited in some parts of the structural models where there is a paucity of data, but trend surfaces have been used to avoid inaccurate distribution of shallow coal seams
Dimensions	▪ *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	▪ Elan South project has a strike length exceeding 10km. The bedding strikes roughly north – south along well defined ridgelines and controlled by westerly dipping thrust faults. ▪ The 2018 Elan South coal resource occurs over a zone which extends 4.6km from north to south. The main resource area is around 600m wide over the ridgeline ▪ The coal seams of the Mist Mountain Formation dip towards the west with dips ranging from 40 - 75 degrees on the western thrust fault, and are brought to the surface through the axis of the Fish Hook Anticline ▪ The upper limit of the resource is the limit of weathering surface (BHWE-3), which is the LiDAR topographical surface minus 3 metres ▪ The lower limit of the resource is at a maximum depth of 200m below topography.
Estimation and modelling techniques	▪ *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* ▪ *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* ▪ *The assumptions made regarding recovery of by-products.* ▪ *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* ▪ *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* ▪ *Any assumptions behind modelling of selective mining units.* ▪ *Any assumptions about correlation between variables.* ▪ *Description of how the geological interpretation was used to control the resource estimates.* ▪ *Discussion of basis for using or not using grade cutting or capping.* ▪ *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	▪ Geovia Minex (version 6.5.2) software was used to create structural and coal quality grids, which are based on 25m mesh (grid cell) size with a scan distance of 2,000 metres. ▪ Resource classification was undertaken using a maximum spacing of 0 – 500m between boreholes for Indicated and 500 – 1000m Inferred resources respectively ▪ There is limited extrapolated resources beyond the furthest boreholes located in the down-dip areas ▪ Previous resource estimate by Tamplin Resources (2017) totalled 36 Mt (7Mt Indicated and 29 Mt Inferred) ▪ Grade cut-offs were not applied globally as blending and / or coal beneficiation would be used consistent with Teck's mines in the Elk Valley, BC ▪ A regression between raw ash (ad) and laboratory tested ARD (air-dried) has been used to estimate ARD from raw ash. The ARD is assumed to be largely representative of in-situ RD ▪ The estimate has been internally audited and deemed reproducible
Moisture	▪ *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method*	▪ All quality parameters are reported on an air-dried basis unless stated otherwise

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	of determination of the moisture content.	
Cut-off parameters	▪ *The basis of the adopted cut-off grade(s) or quality parameters applied.*	▪ Grade cut-offs were not applied globally as blending and / or coal processing would be used to manage product quality attributes
Mining factors or assumptions	▪ *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	▪ The potential mining method used is considered to be open cut, although underground mining was common in the Crowsnest Pass for many years ▪ Open cut resources are limited by a minimum 0.3m seam thickness, between the base of weathering and 200m depth ▪ Open cut resources have not been limited by stripping ratios ▪ No surface constraints have been identified or used to limit or constrain the extent of the resource estimate ▪ Coal resources are defined in areas of ridgeline / elevated topography and are generally distanced from rivers and streams ▪ Mining losses and dilution has not been factored in to the resource estimate
Metallurgical factors or assumptions	▪ *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	▪ Section 4 provides an explanation of processing, clean coal quality and potential product types. ▪ The primary product is expected to be a mid to low volatile hard coking coal suitable for the export market. ▪ Some volumes of secondary thermal or PCI product may also be produced for the export market. ▪ Detailed sizing, washability and clean coal composite testing is underway after completion of four large diameter boreholes. Metallurgical consultants A&B Mylec will be providing a coal quality report on completion of this program
Environmental factors or assumptions	▪ *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	▪ The Elan project is considered to be an early stage exploration project and no conceptual mining studies have been undertaken ▪ Environmentally sensitive areas will need to be considered upon commencement of mine planning or studies ▪ Any coal mine development would need to go through the process of preparing an Environmental Impact Assessment (EIA) and submission of an application to the Alberta Energy Regulator (AER) under the Environmental Protection and Enhancement Act (EPEA) and Canadian Environmental Assessment Act 2012 (CEAA).
Bulk density	▪ *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* ▪ *The bulk density for bulk material must have been measured by*	▪ All coal quality parameters are reported on an air-dried basis unless otherwise stated ▪ A regression between raw ash (ad) and laboratory tested ARD (air-dried) has been used to estimate ARD from raw ash. The ARD is assumed to be largely representative of in-situ RD ▪ Bulk density assumptions have not been made

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	methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit. ▪ *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	
Classification	▪ *The basis for the classification of the Mineral Resources into varying confidence categories.* ▪ *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* ▪ *Whether the result appropriately reflects the Competent Person's view of the deposit.*	▪ Elan South resource polygons were rationalised according to the distribution and variability in coal quality data points, and the classification downgraded if coal quality data was sparse or highly variable. ▪ Any extrapolated coal typically exists down-dip to the west of existing data points, or in the eastern zone as the coal seams approach the surface ▪ The factors used in the rationalisation and determination of final resource classification polygons included: age and reliability of the data, consideration of 3D representivity and removal of isolated points of observation, quantity and location of coal quality data points, variability shown in continuity and grade, and likelihood of the coal seams being mined ▪ In the view of the Competent Person, the Inferred to Indicated resource classification reflects the moderate level of confidence within the deposit, highlighting the project requires further exploration to improve the level of geological confidence
Audits or reviews	▪ *The results of any audits or reviews of Mineral Resource estimates.*	▪ Resource estimates were undertaken in three passes to ensure repeatability, with previous versions saved for reference ▪ The resource estimate has been internally peer reviewed
Discussion of relative accuracy/ confidence	▪ *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* ▪ *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* ▪ *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	▪ The drill spacing is relatively tight along the seam outcrop zones and supported by trench and outcrop measurements. ▪ The level of confidence in the exploration and data acquisition is moderate based on the level of structural complexity and limitations in achieving high core recoveries

Atrum Coal Ltd ACN 153 876 861 – Unit 1B, 205-207 Johnston Street Fitzroy, VIC 3065 **T** +61 (0) 3 9191 0135 **E** info@atrumcoal.com
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Elan South Coal Resources by seam with coal quality attributes

SEAM	INDICATED Mt	INFERRED Mt	TOTAL Mt	THICK m	IM %	ASH %	VM %	TS %	FSI	ARD
S1C	6.1	9	15.0	8.9	0.6	24.7	21.9	0.58	5.5	1.50
S1CL	0.5	2	2.3	1.2	0.6	25.1	21.4	0.65	5.1	1.50
S1B	1.1	3	4.3	2.1	0.6	27.8	21.8	0.65	4.8	1.55
S1AU	4.6	4	8.4	2.8	1.0	25.9	18.7	0.41	1.3	1.52
S1AL	8.2	7	14.9	4.7	0.6	24.6	20.4	0.50	2.6	1.50
S2BU	-	5	4.6	2.7	1.4	21.9	20.3		1.7	1.45
S2B	1.1	9	9.9	4.2	0.5	27.7	19.9	0.36	3.1	1.54
S2BL	-	2	1.7	4.3	-	-	-	-	-	-
S2AU	4.4	10	14.8	5.3	0.5	30.3	19.0	0.33	2.5	1.58
S2AL	5.3	12	16.8	6.2	0.7	26.4	20.9	0.33	3.1	1.52
S4A	-	1	1	1.1	-	-	-	-	-	-
S4B	-	3	3.2	2.2	-	-	-	-	-	-
S4C	-	1	1	2.4	-	-	-	-	-	-
Grand Total	**31.3**	**66**	**97**							

All resources are reported as million tonnes (Mt) in-situ, some rounding errors may occur. All quality variable reported on air-dried basis and reflect average composited coal quality values from drillholes.

Elan South Summary of points of observation

BOREID	X	Y	Z	FINALD	AZIMUTH	DIP	TYPE
CBM100-13-12	685,137	5,521,126	1,528	721	0	-90	CORE
ESLD18-01A	687,642	5,512,687	1,803	35	0	-90	LD
ESLD18-01B	687,640	5,512,686	1,803	36	0	-90	LD
ESLD18-02A	687,433	5,512,958	1,948	67	0	-90	LD
ESLD18-02B	687,433	5,512,957	1,948	73	0	-90	LD
ESRAB18-13	687,285	5,512,845	1,878	276	90	-50	RAB
ESRAB18-14	687,350	5,515,378	2,005	168	90	-60	RAB
ESRAB18-15	687,329	5,515,205	1,987	254	80	-55	RAB
ESRAB18-16	687,466	5,515,403	2,015	180	270	-55	RAB
ESRAB18-17	687,468	5,515,404	2,015	296	100	-85	RAB
ESRAB18-18	687,310	5,515,077	1,983	185	90	-55	RAB
ESRAB18-19	687,504	5,514,707	2,035	119	80	-60	RAB
ESRAB18-20	687,250	5,515,609	1,912	176	112	-55	RAB
ESRAB18-21	687,808	5,515,006	2,008	334	265	-58.2	RAB
ESRAB18-22	687,611	5,514,855	2,054	191	270	-70	RAB
ESRAB18-23	687,538	5,515,414	1,976	313	360	-90	RAB
ESRAB18-24	687,465	5,515,657	1,885	285	0	-90	RAB
ESRAB18-25	687,399	5,515,594	1,894	243	0	-90	RAB
ESRAB18-26	687,581	5,515,796	1,861	188	270	-60	RAB

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BOREID	X	Y	Z	FINALD	AZIMUTH	DIP	TYPE
ESRAB18-27	687,496	5,515,778	1,846	124	270	-70	RAB
ESRAB18-28	687,495	5,515,777	1,846	152	360	-90	RAB
ESRAB18-29	687,472	5,515,177	2,058	153	0	-90	RAB
ESRAB18-30	687,643	5,513,602	1,907	237	270	-70	RAB
ESRAB18-31	687,351	5,515,378	2,007	160	31.5	-88.3	RAB
ESRAB18-32	687,472	5,514,027	1,984	126	90	-65	RAB
ESRC18-01	688,278	5,513,486	1,839	273	83	-65	RC
ESRC18-02	687,995	5,513,410	1,822	271	90	-63	RC
ESRC18-03	687,803	5,513,621	1,837	278	280	-60	RC
ESRC18-04	687,719	5,513,003	1,819	247	280	-65	RC
ESRC18-05	687,660	5,512,712	1,805	115	280	-60	RC
ESRC18-06	687,640	5,512,684	1,808	121	0	-90	RC
ESRC18-07	687,530	5,513,859	1,956	108	0	-90	RC
ESRC18-08	687,441	5,513,481	1,992	245	90	-70	RC
ESRC18-09	687,439	5,513,482	1,992	154	360	-90	RC
ESRC18-10	687,440	5,513,256	1,970	100	360	-90	RC
ESRC18-11	687,433	5,512,963	1,960	142	360	-90	RC
ESRC18-12	687,502	5,513,066	1,933	241	285	-60	RC
ESTR18-01	687,499	5,512,565	1,806	41	245	-5	TREN
ESTR18-02	687,300	5,515,618	1,910	33	115	-10	TREN
ESTR18-03	687,358	5,515,587	1,904	27	120	-5	TREN
ESTR18-04	687,489	5,515,525	1,968	90	250	-5	TREN
ESTR18-05	687,384	5,515,490	1,954	70	300	-1	TREN
ESTR18-06	687,435	5,515,290	2,040	9	70	-1	TREN
ESTR18-07	687,374	5,515,578	1,896	60	57	-3	TREN
GN-TR-17-01	687,324	5,517,201	1,977	14	262	-18	TREN
GN-TR-17-02	687,441	5,512,858	1,942	16	102	-10	TREN
GN-TR-17-03	687,437	5,513,053	1,960	13	70	-24	TREN
GNDH-14-01	687,445	5,516,652	1,882	131	70.4	-56	CORE
GNDH-14-02	687,477	5,516,625	1,883	91	0	-90	CORE
GNDH-14-03	687,276	5,516,727	1,902	107	90	-55	CORE
GNDH-14-04	687,178	5,521,527	1,618	131	72	-55	CORE
GNDH-14-05	687,481	5,512,553	1,803	148	45	-50	RC
GNDH-14-06	687,481	5,512,553	1,803	57	60	-70	RC
GNDH-14-07	687,674	5,512,658	1,788	183	270	-50	RC
GNTR-14-01	687,497	5,512,328	1,770	72	80	-1	TREN
GNTR-14-02	687,464	5,512,554	1,803	45	72	-6	TREN
GNTR-14-03	687,506	5,512,570	1,806	97	62	-1	TREN
GNTR-14-04	687,631	5,512,638	1,796	6	76	-1	TREN

BOREID	X	Y	Z	FINALD	AZIMUTH	DIP	TYPE
GNTR-14-05	687,659	5,512,665	1,794	15	196	-1	TREN
GNTR-14-06	687,298	5,516,506	1,803	10	96	-5	TREN
GNTR-14-07	687,486	5,516,489	1,806	73	76	-10	TREN
HDH-OilPad	688,117	5,512,927	1,855	450	0	-90	CORE

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