

Initial Fish Hook Area Drilling Exceeds Expectations

HIGHLIGHTS

- Initial 17 holes completed in the Fish Hook area of Elan South, totalling 2,700m
- Shallow coal intersected in all completed holes, with total apparent coal thicknesses ranging from 5.7 to 28.4 metres, and averaging 13.8 metres
- Attractive coal deposition demonstrated across the full east-west extent of the Fish Hook area
- Results confirm favourable Fish Hook geological structures with strong potential for low strip ratio mining
- Significant new resource additions now expected at Fish Hook
- Updated Elan Project resource estimates expected in 4Q 2019

Atrum Coal Limited (**Atrum** or the **Company**) (ASX: ATU) is pleased to provide an update on drilling progress at its 100%-owned Elan Hard Coking Coal Project (**Elan Project**) in southern Alberta, Canada.

Managing Director, Max Wang, commented: *"The initial drilling completed in the Fish Hook area since early September has comfortably exceeded our expectations. Surface mapping, and three previous holes completed in 2014, had indicated near surface coal occurrences at Fish Hook. However the current drilling program has now confirmed shallow, thick coal seam intersections across the full east-west extent of the Fish Hook area. It has also confirmed the favourable geological structures prevailing in this zone. The result is expected to be the addition of significant new resources in the Fish Hook area of Elan South later this year."*



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Key Projects
Elan 100%
Groundhog 100%
(incl Panorama North JV) (65%)
Bowron River 100%

Drilling activity update

Following completion of drilling in the southern area of Isolation South in early September 2018, one exploration drill rig was remobilised to Elan South to commence drilling of the Fish Hook area.

This release contains results for the first 17 holes completed at Fish Hook (Holes 64 to 75, 77 to 80, and 85 of the Elan South 2019 program; excepting Hole 75 which is yet to be geophysically logged). Results for Holes 1 to 63 (drilled at the Oil Pad Ridge and South East Corner areas of Elan South) have been previously released by Atrum.

The second exploration drill rig on site continues to conduct drilling in the northern area of Isolation South. Further results from the Isolation South drilling program are expected to be released in coming weeks.

Initial Fish Hook results

A total of 17 rotary air blast holes have been completed to date at Fish Hook as part of the 2019 Elan South drilling program (see Figures 1 and 2 for drillhole locations).

The Fish Hook area contains several geological features including a western thrust fault and an anticline feature known as the Fish Hook Anticline, as well as several thrusts or anticlines in the eastern part of the Fish Hook area. The Fish Hook Anticline is exposed in the southern facing slope of the ridgeline, just north of where Fools Creek separates the Fish Hook area from the Oil Pad Trend (see Figure 3).

The initial Fish Hook drilling has confirmed a southward plunge on the Fish Hook anticline, so that the depth to the coal bearing Kootenay Formation remains shallow trending northward along the anticline axis. Additionally, the drilling has indicated that the coal seams of the Kootenay Formation do not extend to depth on the eastern limb of the anticline; the coal seams are again projected to the surface along a fault or anticline in Holes 70, 71 and 77. In the far eastern area, Holes 79 and 80 encountered shallow coal seams along another structural feature.

Total cumulative coal thicknesses (apparent) in all reported holes ranged from 5.7 to 28.4 metres and averaged 13.8 metres. Depth to first coal ranged from 13.1 to 62.1 metres across all reported holes.

These results demonstrate shallow, thick coal seam intersections across the full east-west extent of the Fish Hook area. They also confirm the favourable geological structures prevailing in this zone, which deliver strong potential for low strip ratio mining. The net result is expected to be the addition of significant new resources in the Fish Hook area of Elan South.

See Figure 1 for the locations of the completed drill holes and total coal intersected in each hole.

Table 1: Fish Hook area drill hole locations and cumulative coal thickness (apparent)

Drillhole ID	Drill Type	Easting	Northing	Elevation	Total Depth	Azimuth	Dip	Total Coal Thickness Apparent (m)	Start Depth of Coal (m)
ESRAB19-64	RAB	687,425	5,516,406	1,734	145.6	90	-65	11.8	55.7
ESRAB19-65	RAB	687,608	5,516,697	1,797	108.5	270	-65	9.9	26.7
ESRAB19-66	RAB	687,647	5,516,718	1,784	139.0	270	-60	5.7	40.3
ESRAB19-67	RAB	687,645	5,516,590	1,762	110.0	270	-60	8.1	29.7
ESRAB19-68	RAB	687,648	5,516,721	1,780	135.7	270	-80	13.5	40.4
ESRAB19-69	RAB	687,593	5,516,879	1,825	111.5	270	-60	9.6	32.8
ESRAB19-70	RAB	687,693	5,517,093	1,864	150.3	90	-60	16.2	23.4
ESRAB19-71	RAB	687,717	5,517,227	1,910	158.8	90	-60	23.9	36.3
ESRAB19-72	RAB	687,550	5,517,276	1,906	161.9	270	-60	18.2	42.4
ESRAB19-73	RAB	687,468	5,517,159	1,942	223.4	0	-90	28.4	32.1
ESRAB19-74	RAB	687,552	5,517,276	1,905	145.7	0	-90	12.2	45.9
ESRAB19-75	RAB	687,631	5,516,886	1,809	183.0	270	-60	TBC	TBC
ESRAB19-77	RAB	687,710	5,516,948	1,804	242.2	270	-60	25.9	27.3
ESRAB19-78	RAB	687,714	5,516,946	1,800	129.6	90	-70	9.8	13.4
ESRAB19-79	RAB	687,936	5,517,159	1,820	205.6	90	-65	7.8	28.6
ESRAB19-80	RAB	687,958	5,517,258	1,847	129.7	0	-90	11.1	62.1
ESRAB19-85	RAB	687,237	5,516,800	1,889	214.0	90	-60	11.3	28.5

Note 1: Drill hole ESRAB19- 75 is yet to be geophysically logged

Drill holes detailed in this release have been geophysically logged by Century Wireline Services with a suite of tools including natural gamma, caliper, long and short spaced density, resistivity, deviation and dipmeter. Hole 75 is yet to be geophysically logged and interpreted.

The exploration strategy for the 2019 program at Fish Hook was to initially drill a series of rotary air blast holes to assist in defining the structural geology of the deposit. This drilling was planned to complement Atrum's limited previous drilling (three holes in 2014) that proved the existence of coal at Fish Hook and defined Inferred resources in this area.

Drilling at Fish Hook and Isolation South continues while large diameter coring for coal quality samples has started at the South East Corner. Further exploration results updates can be expected in the coming weeks.

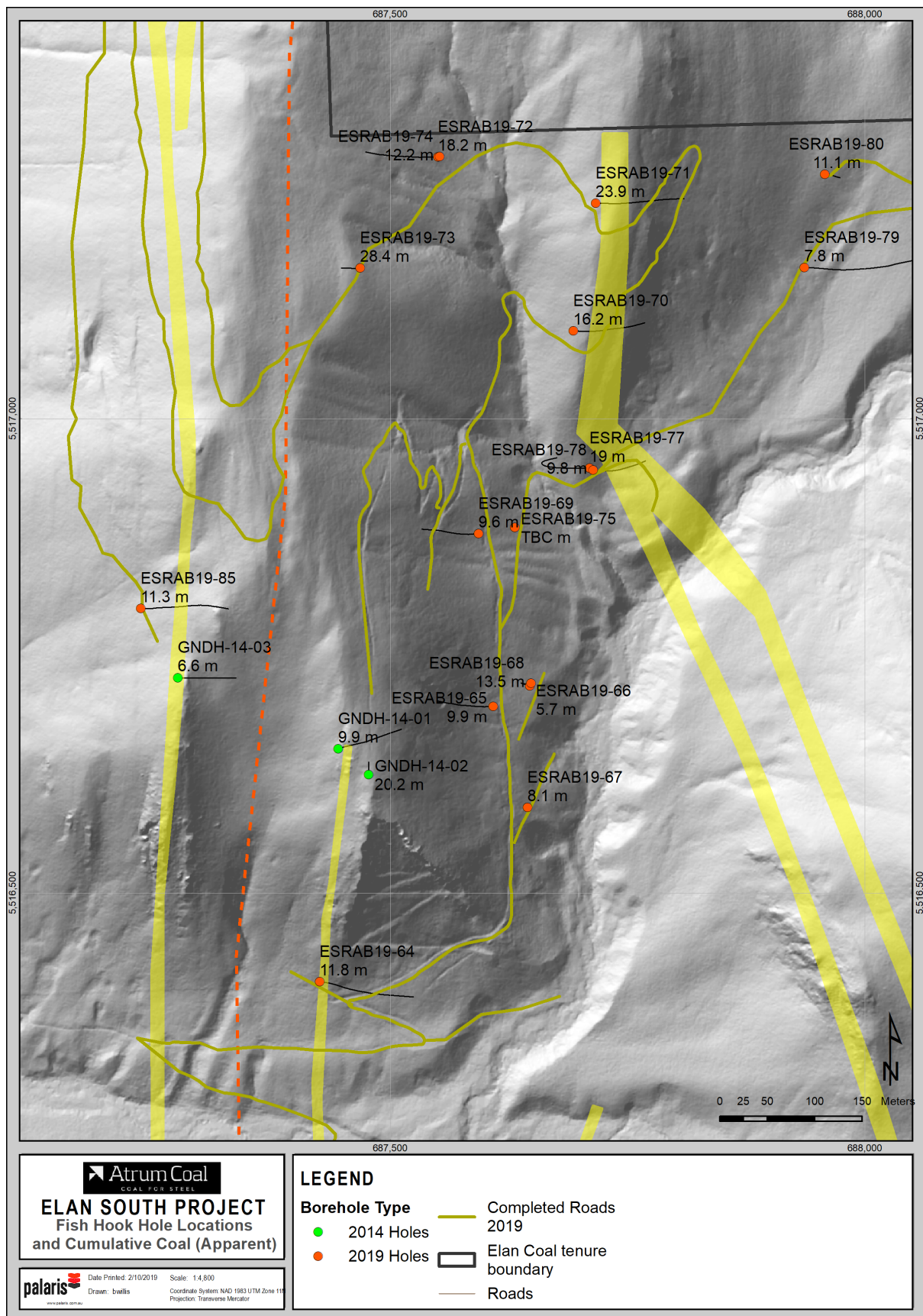


Figure 1: Completed and planned borehole locations in the Fish Hook area of Elan South

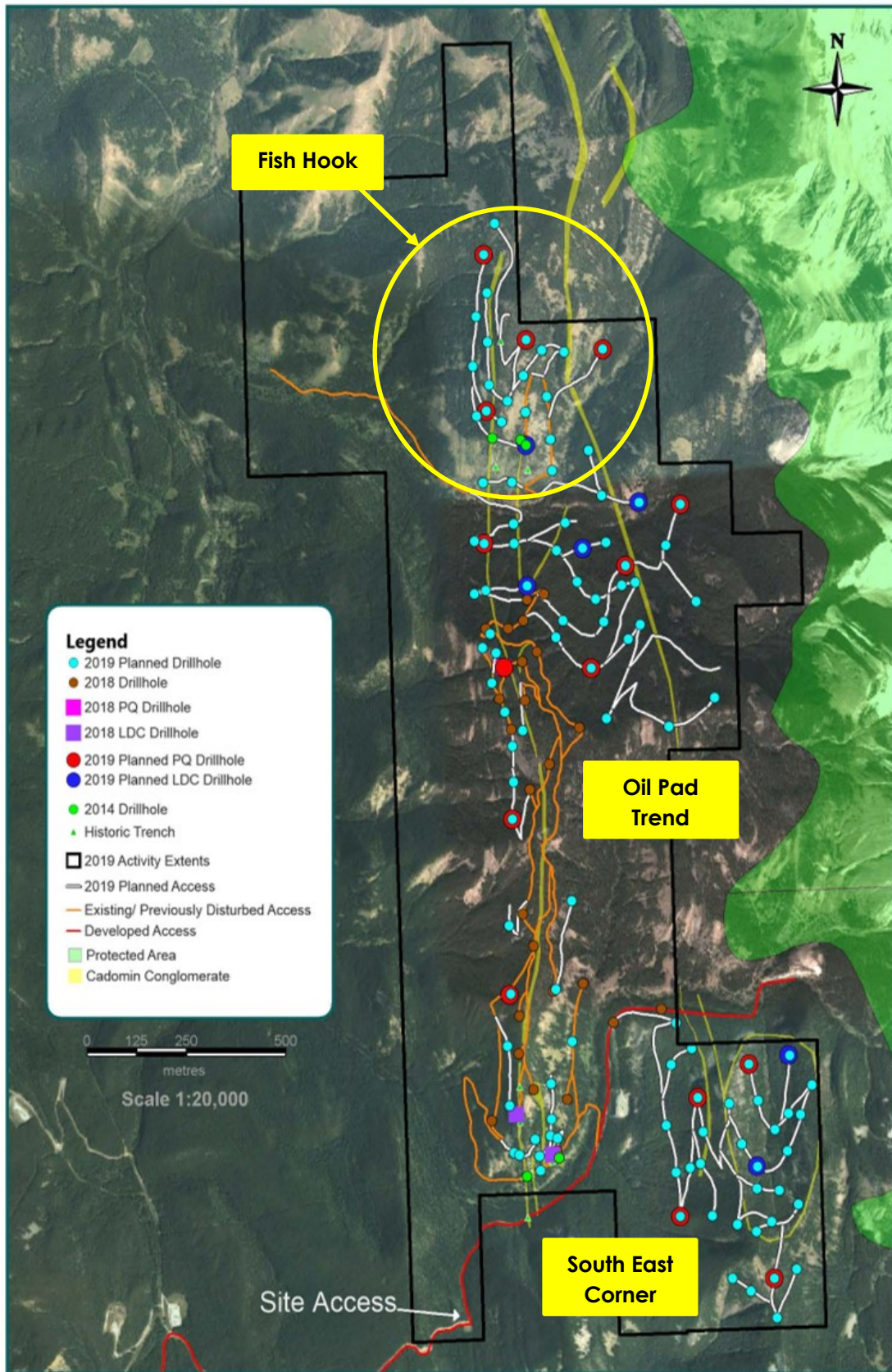


Figure 2: Location of the Fish Hook area and total planned Elan South drilling program

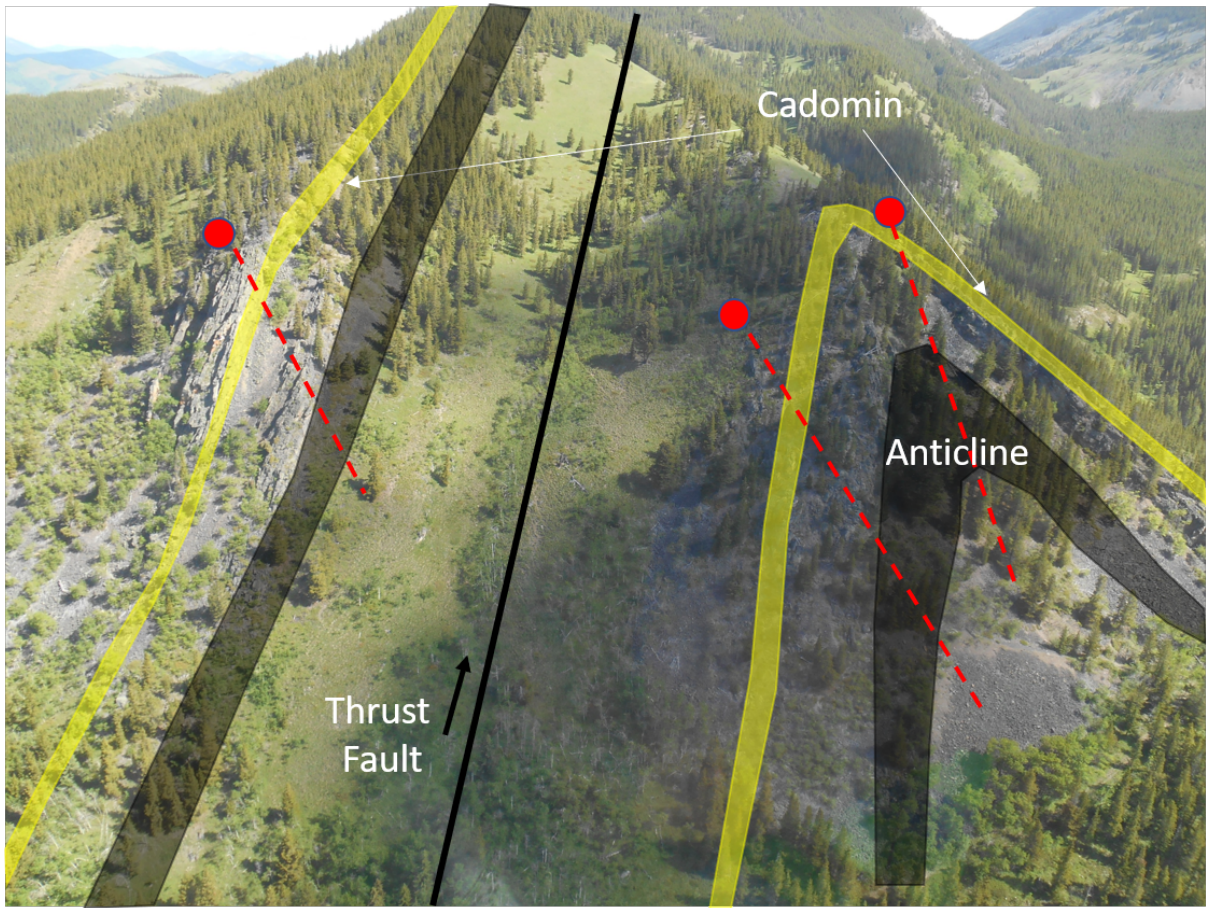


Figure 3: Aerial photograph of western fault and Fish Hook Anticline on south facing ridge at Fish Hook

APPENDIX: Further Fish Hook Details

Geology

The Fish Hook area is located on the Livingstone Thrust Sheet, with the Livingstone Thrust being the main controlling structural feature in the region. The overall Elan South project, of which Fish Hook is a part, is located between the Coleman Thrust fault to the west and the Livingstone Thrust fault to the east.

The Fish Hook area is characterised by a series of N-NNW trending thrust faults, anticlines and synclines that provide emplacements of shallow coal. The area is also characterised by north-south ridges with sandstone and conglomerate outcrops of the Cadomin Formation on the ridge tops.

On the western side of the ridgeline, the coal seams dip quite steeply (45 to 75 degrees) westward on the upthrust zone of the major thrust fault. The Cadomin Formation outcrops along the surface expression of the fault and is represented by a competent sandstone and conglomerate unit on the top of the ridge.

On the eastern side of the ridge, exploration drilling and surface mapping has identified that the seams are again uplifted toward the surface through the nose of an anticline structure, known as the Fish Hook Anticline. East of the Fish Hook Anticline, surface mapping indicated further Cadomin Formation outcrops (which usually indicate the presence of shallow coal) that provide clear target areas for drilling.

Tectonic deformation of the Mist Mountain Formation coal seams is a major factor that controls the areal extent, thickness variability, lateral continuity, and geometry of shallow coal deposits at Fish Hook, and the greater Elan South area.

Previous exploration

During the late 1940s and early 1950s, Western Canadian Collieries undertook dozer assisted construction of tracks cut into the ridges exposing Mist Mountain Formation coal outcrops.

The Elan South area was originally referred to as the Fools Creek area. The track construction was followed by surface geological mapping of the Elan South area which resulted in a series of detailed cross sections showing measured seam thicknesses and dips.

Elan Coal Limited drilled three holes at Fish Hook in 2014, with a strategy of testing proposed drill targets and acquiring coal quality data. Helicopter transportable rigs were utilised and the drilling method was a mixture of HQ and PQ coring.

Existing resources

Fish Hook forms the northern part of the existing Elan South resource area. The current resource of 97 Mt for Elan South was reported by Atrum (31 Mt Indicated and 66 Mt Inferred).

The Elan South resource estimate was announced to the ASX on 6 January 2019 (*Elan South Hard Coking Coal Resource increased by 170% to 97 Mt*)¹.

Table 2: Elan South resource estimate (at 31 December 2018)

Project Area	Measured	Indicated	Inferred	Total
Elan South	-	31	66	97
Total	-	31	66	97

¹ Atrum confirms that, other than the drilling results updates released to ASX since July 2019, it is not aware of any new information or data that materially affects the information included in that release. All material assumptions and technical parameters underpinning the estimates in that release continue to apply and have not materially changed.

About Atrum Coal

Atrum Coal (ASX: ATU) is a metallurgical coal developer. The Company's flagship asset is the 100%-owned Elan Hard Coking Coal Project in southern Alberta, Canada. Elan hosts large-scale, shallow, thick, hard coking coal (HCC) deposits with a current JORC Resource Estimate of 298 Mt (70 Mt Indicated and 228 Mt Inferred).¹ Comprehensive quality testing of Elan South coal on samples from the 2018 exploration program, combined with review of substantial historical testwork data for the broader Elan Project, has confirmed Tier 1 HCC quality.

The initial focus for development is the Elan South area, which is located approximately 13 km from an existing rail line with significant excess capacity, providing direct rail access to export terminals in Vancouver and Prince Rupert. Elan South shares its southern boundary with Riversdale Resources' Grassy Mountain Project, which is in the final permitting stage for a 4.5 Mtpa open-cut HCC operation. Around 30 km to the west, Teck Resources operates five mines (the Elk Valley complex) producing approximately 25 Mtpa of premium HCC for the seaborne market.

A Scoping Study to evaluate development of Elan South is underway with targeted completion in 4Q 2019. This work will feed into a Pre-Feasibility Study (PFS) which is planned to be completed in 2H 2020.

¹ Other than the drilling results released to ASX including this announcement in 2019, Atrum confirms that it is not aware of any new information or data that materially affects the information included in its ASX releases dated 6 January 2019 (*Elan South Hard Coking Coal Resource increased by 170% to 97Mt*) and 22 January 2019 (*Additional 201Mt JORC Resources defined for Elan Project*). All material assumptions and technical parameters underpinning the estimates in these releases continue to apply and have not materially changed.

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Competent Persons Statement

Exploration Results

The information in this document that relates to Exploration Results of the Fish Hook area of the Elan South project 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 the exploration programs in 2018 and 2019.

The JORC Code (2012)

Table 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> From the 17 rotary air blast holes completed in the 2019 program, open cut cuttings have been sampled at 1m depth intervals. These samples are not intended to be used for coal quality testwork, The preference is for the coring program to be undertaken, twinning selected open holes The coring and coal quality sampling and testing program has not yet commenced at Fish Hook in 2019
Drilling techniques	<ul style="list-style-type: none"> Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc). 	<ul style="list-style-type: none"> The 17 rotary air blast boreholes completed in 2019 are percussion (rotary air blast) boreholes with a 4 1/2" diameter hammer drill bit 13 of the boreholes completed in 2019 were geophysically logged to total depth in the open hole, while ESRAB19-74 was logged through the rod string One borehole (ESRAB19-75) to be re-logged due to hole blockages
Drill sample recovery	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Rotary air blast holes are geophysically logged and seam intervals have been determined from the geophysical log signatures The coring and coal quality sampling and testing program has not yet commenced at Fish Hook in 2019

Criteria	JORC Code explanation	Commentary
Logging	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Open hole cuttings (rotary air blast) are logged in 1m sample intervals taken and seam intervals adjusted to depths from geophysical log interpretation Boreholes were geophysically logged with geophysical sondes including density, caliper and gamma, deviation and dipmeter Three boreholes (ESRAB19-75) to be re-logged due to hole blockages Cuttings samples have been logged in detail by the field geologists and are adjusted to geophysical log depths in the final logs
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Not applicable to the current drilling completed at Fish Hook in 2019
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> 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. 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. 	<ul style="list-style-type: none"> Not applicable to the 2019 program 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
Verification of sampling and assaying	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 Atrum Coal and later by Palaris Twinned holes have been used for the PQ coring program. The twinned holes also incorporate geophysical logging
Location of data points	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> The locations of boreholes drilled in 2019 have been surveyed using Trimble DGPS 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

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> Quality and adequacy of topographic control. 	
Data spacing and distribution	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Rotary air blast holes ESRAB19-64 to 75, ESRAB19-77 to 80 and ESRAB19-80 are located at the Fish Hook area of Elan South and are typically within 100-200m of each other These boreholes completed are expanding on the resource areas identified during 2018, and the coal seams are directly correlatable with the 2014 drilling The borehole locations are shown in Figure 1 of this announcement The 2019 program will continue infilling at Fish Hook where a total of 30 holes are planned, increasing the level geological confidence
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> The rotary air blast holes drilled in 2019 at Fish Hook are a mixture of inclined and vertical, as shown in Table 1 of this announcement. Inclined holes 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
Sample security	<ul style="list-style-type: none"> The measures taken to ensure sample security. 	<ul style="list-style-type: none"> Not applicable to the 2019 program During the coring programs, core is 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
Audits or reviews	<ul style="list-style-type: none"> The results of any audits or reviews of sampling techniques and data. 	<ul style="list-style-type: none"> Reviews by Atrum 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 and 2019 programs Palaris representatives were on site in September 2018 and August 2019 to oversee the drilling program, and ensure a high standard of geological data is provided by Atrum Coal's geologists

Table 1 – Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> The Elan South Project consists of four coal exploration permits encompassing an area of approximately 6,574 ha. The A13 coal agreements that contain the resources for this report are held by Elan Coal. The coal leases were acquired on January 20, 2012 and are held by Elan Coal Ltd. Coal Lease Applications 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). A coal lease does not grant surface rights; a surface lease or grant is required. The Property falls within the Rocky Mountain Forest Reserve, which is managed by the Alberta Government. As such, no road use agreements with private companies are required for access to the Property.

Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> 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 in Elan South Area	<ul style="list-style-type: none"> Acknowledgment and appraisal of exploration by other parties. 	<ul style="list-style-type: none"> 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 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. In 2018, Atrum Coal completed 32 open holes (reverse circulation and rotary air-blast) and five cored holes (four 8C large diameter holes and one PQ cored hole)
Geology	<ul style="list-style-type: none"> Deposit type, geological setting and style of mineralisation. 	<ul style="list-style-type: none"> 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

Criteria	JORC Code explanation	Commentary
		<p>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.</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> easting and northing of the drill hole collar elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole down hole length and interception depth hole length. 	<ul style="list-style-type: none"> This information is provided for all boreholes completed at the Fish Hook area in 2019, consisting of rotary air blast holes (ESRAB19-64 to 75, ESRAB19-77 to 80 and ESRAB19-80) as summarised in Table 1 of this ASX announcement Downhole apparent thicknesses are provided for the rotary air blast holes in Table 1
Data aggregation methods	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> No cut-off grades were applied to the exploration results in this announcement For rotary air blast holes, individual samples are taken at 0.5m sample increments, and core samples taken on a ply by ply basis No compositing of sample results has been undertaken in 2019
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> 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'). 	<ul style="list-style-type: none"> Discrepancies between apparent and true seam thickness are an important consideration for interpretation of the drilling results in this announcement The results tabulated in this announcement are apparent thicknesses as recorded in drill holes, and may be significantly different to the true thickness of the seams. More work will need to be undertaken to understand how true thicknesses are represented in the deposit, and will be addressed through use of borehole deviation survey data, downhole measurement of strata dip (dipmeter) and updated structural interpretation / fault modelling 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Borehole locations plans are provided along with drill hole locations and seam intersects from the 2019 program Work has commenced on updating geological models incorporating the recent drilling results The Competent Person has deemed it would be appropriate to update the geological model before providing updated cross

Criteria	JORC Code explanation	Commentary
	<i>of drill hole collar locations and appropriate sectional views.</i>	sections and other geological plans in this release
Balanced reporting	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> To ensure balance reporting of Exploration Results, Table 1 include all boreholes drilled at Fish Hook in 2019 (aside from ESRAB19-75 yet to be geophysically logged)
Other substantive exploration data	<ul style="list-style-type: none"> Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances. 	<ul style="list-style-type: none"> Atrum Coal geologists have undertaken a significant surface mapping program in 2018 and 2019, collecting data points from outcrops of the Blairmore Group and Cadomin Formation, coal seams of the Mist Mountain Formation Along with surface mapping and trenching, road and track cuttings have provided a very useful source of outcrop measurements This will be included with the volumes of geological data that will be used for geological model updates and to assist in controlling the structure of the coal seams
Further work	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> The drilling of percussion (air-blast) structure holes will be continued in 2019, with approximately 30 holes to be completed at Fish Hook Cored boreholes will continue to be drilled in 2019 with around 20 8" diameter cored boreholes planned The cores will be subjected to detailed raw quality sizing and washability test work, including comprehensive testing of clean coal composites and coke strength testing Palaris has commenced with updating 3D geological models of Elan South