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Atrum Coal
COAL FOR STEEL

ASX Release

5 October 2018

Significant Coal Intersections in 2018 Panorama North Drilling Program

HIGHLIGHTS

- **2018 drilling program completed at Panorama North with joint venture partner JOGMEC**
- **A total of 1,979 metres of fully cored diamond drilling completed at eight sites with significant coal seam intersections**
- **Core submitted to laboratory for analysis and review of drilling results underway**
- **Results to be incorporated with previous drilling in order to calculate a maiden JORC Resource for Panorama North**
- **Panorama North is adjacent to 100% owned Groundhog Project which hosts a 1.02 billion tonne JORC Resource**

Atrum Coal Ltd ("**Atrum**" or the "**Company**") (**ASX: ATU**) is pleased to update shareholders on recent progress and planning at the Panorama North Anthracite Project in British Columbia (BC), Canada.

Atrum and its joint venture partner, Japan Oil, Gas and Metals National Corporation (JOGMEC) started the 2018 field program at Panorama North in mid-August 2018 with the aim of identifying the extent of the anthracite deposit within a wide area at Panorama North. The holes drilled this year, combined with those drilled in 2016 and 2017, were designed to obtain adequate data for a resource estimate and to provide more information on the local geology and roof and floor structure of anthracite seams.

Drilling of 1,979m fully cored holes at eight sites was completed according to plan and without any safety or environmental incident. Cores from the drilling have been submitted for testing and analysis with results expected later this year. Initial visual inspection results are encouraging, with cores showing similar physical properties as the samples taken from the 2016 and 2017 drilling program.

Managing Director, Max Wang, commented: *"We are very pleased that the drilling in this year's exploration program at Panorama North has been completed smoothly and according to plan, and we are encouraged by the results. The anthracite market, like the coking coal market, has been strong over the past several quarters, and is forecast to remain so for the foreseeable future.*

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Key Projects

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

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"JOGMEC coal exploration management visited the site and reviewed the drilling operations. They also inspected other Groundhog and Panorama project areas, including a site tour/survey of Panorama South where a number of new anthracite outcrops have been identified. We are in discussions with JOGMEC on the next steps for the joint venture program at Panorama North."

Panorama North Anthracite Project

The Panorama North Project is located south-west of Groundhog North in BC, Canada (refer Figure 1). It consists of 12 coal licences and covers an area of approximately 74km^2. The Company has a Joint Exploration Agreement (**Panorama North JEA**) with JOGMEC. Under the agreement, JOGMEC can earn up to a 35% interest in the Panorama North Project by investing C$5M in exploration expenditures across the project over a three-year period.

Prior to the 2018 exploration program, JOGMEC had earned in a 21% interest in the Panorama North Project through JV exploration funding in 2016 and 2017. At the end of the current 2018 exploration program ending 31 March 2019, JOGMEC will increase its equity interest in the project to 35%.

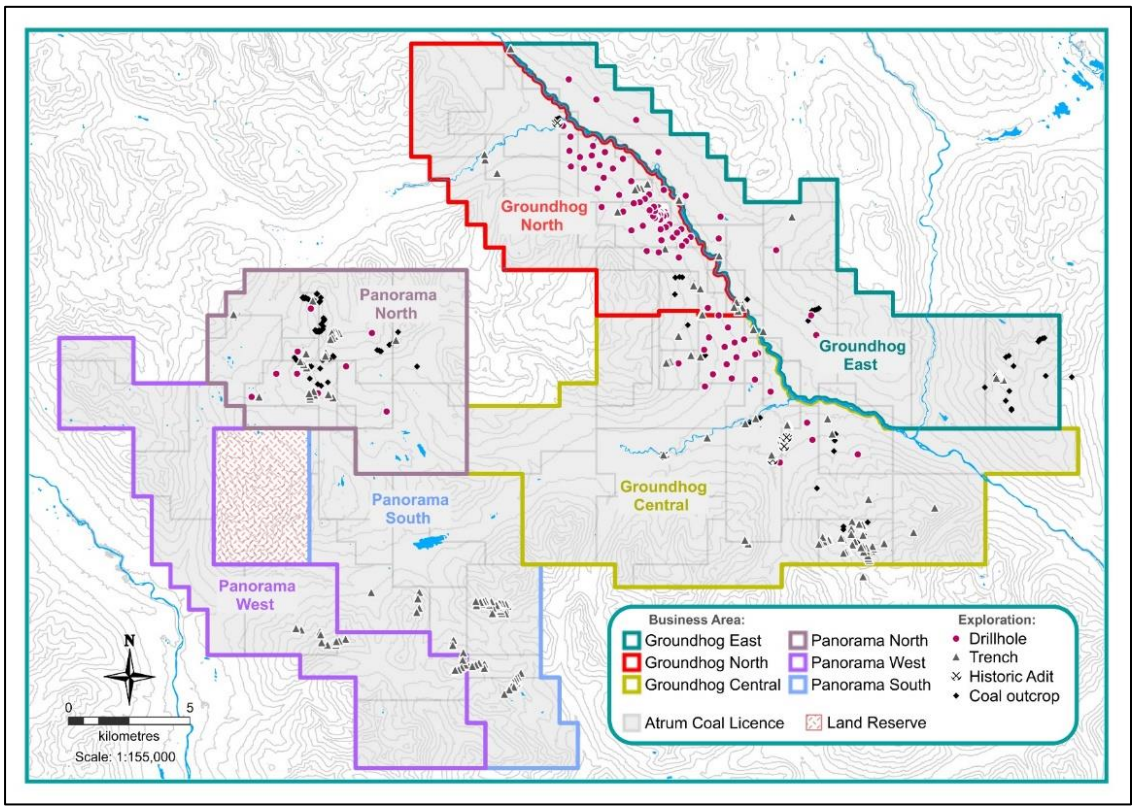

Figure 1: Panorama and Groundhog project areas, British Columbia, Canada

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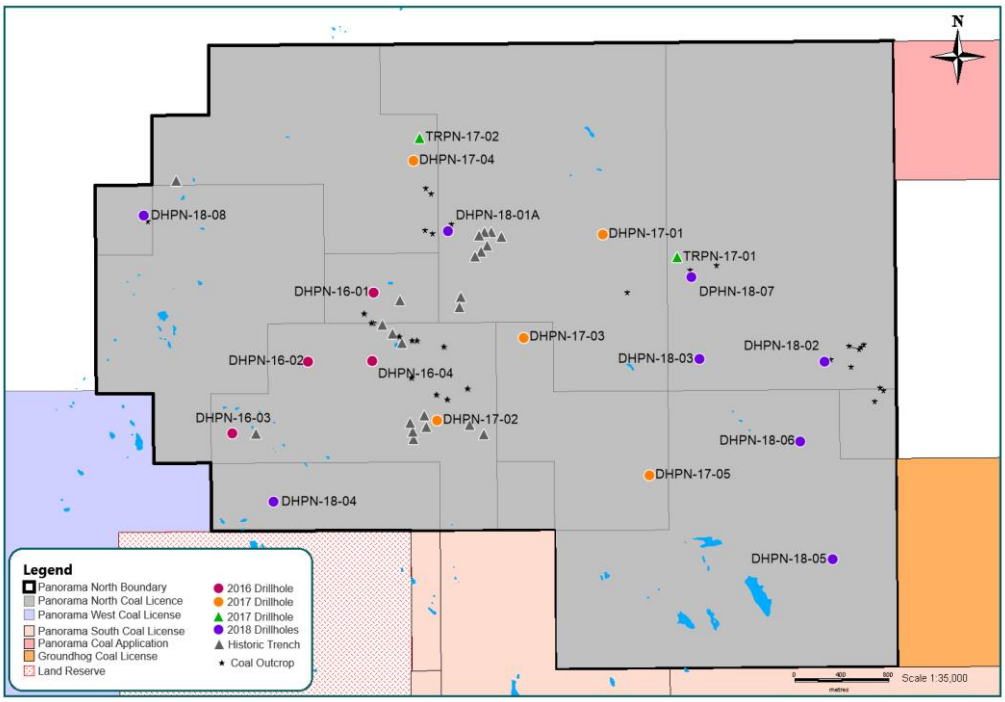

Figure 2: 2018 and Prior Drill Hole and Field Trenching Locations at Panorama North

The 2018 drilling results at Panorama North are encouraging with several promising seam intersections, and selected results of the eight drillholes completed this year are summarised in Table 1. Several coal intersections from the 2017 and 2016 drilling programs are also listed.

Borehole collars, cumulative coal thicknesses and all seam intersections for the 2018 program are listed for completeness in Tables 2, 3 and 4 (Appendix A). Coal samples from the 2018 program have been sent to an independent laboratory in Calgary for testing and analysis. Although the Company has not received laboratory results, visual inspection results are encouraging, with cores showing similar physical properties as the samples taken from the 2016 and 2017 drilling program.

Table 1: Notable Coal Seam Intersections at Panorama North

Drillhole ID	Program Year	Coal Seam Name	Seam Thickness (m)	Depth of Intersection (m)
DHPN-18-01A	2018	CLAW B	2.47	104
DHPN-18-01A	2018	CLAW C	1.84	171
DHPN-18-02	2018	CLAW C	2.35	96
DHPN-18-04	2018	CLAW B	3.96	63
DHPN-18-04	2018	CLAW C	2.70	97
DHPN-18-07	2018	CLAW C	2.24	51
DHPN-18-07	2018	CLAW E	1.80	86
DHPN-17-01	2017	CLAW B	2.43	147
DHPN-17-03	2017	CLAW B	1.92	124
DHPN-16-01	2016	CLAW C	1.42	82
DHPN-16-04	2016	CLAW C	2.11	143

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Figure 3: 2018 Drilling at Panorama North

Figure 4: 2018 Field Mapping at Panorama North.

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Figure 5: 2018 Field Mapping at Panorama North

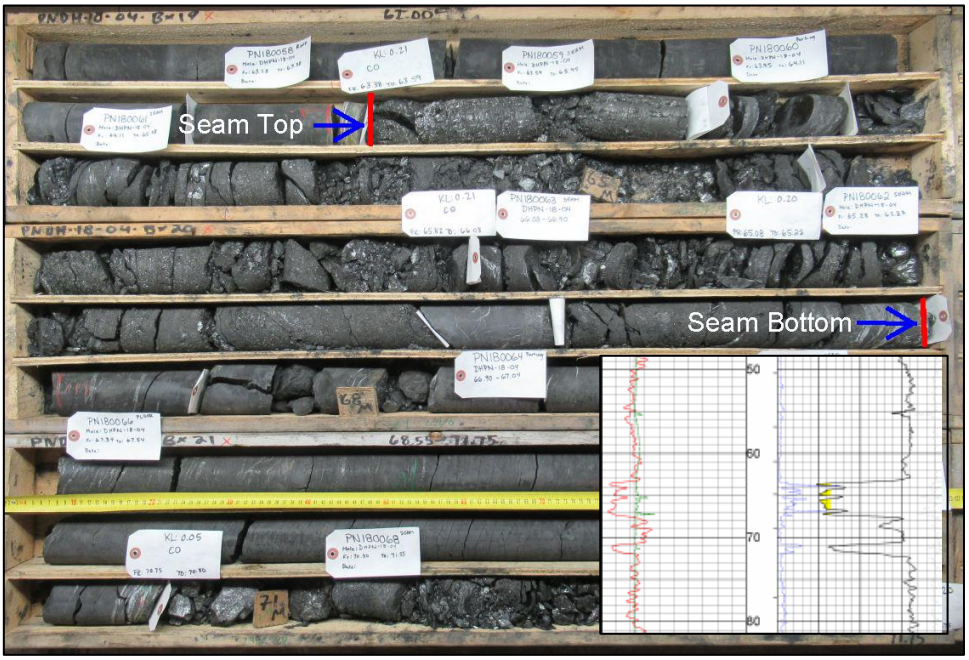

Figure 6: Sample Drill Cores from 2018 Panorama North Drilling

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Next Steps

Lab test and analysis results from the Panorama North 2018 drilling program are expected to be received by the end of this year and will be incorporated with the 2016 and 2017 results. Data will be compiled and will form the basis for an initial resource estimate for Panorama North, expected to be released in Q1 2019.

Earlier this year, the Company entered into an Addendum to amend the Panorama North JEA to give JOGMEC the exclusive right to negotiate a possible Joint Exploration Agreement, on or before 31 March 2021, on the Panorama South Project which is immediately south of Panorama North.

JOGMEC coal exploration management visited the site during the Panorama North drilling program and also inspected the Groundhog and Panorama South project areas (see Figure 7). The Company is in discussion with JOGMEC on planning the next phase of the JV program for Panorama North.

Figure 7. Senior Staff from JOGMEC and Atrum Inspecting a Panorama South Site

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APPENDIX A: DRILLHOLE DETAILS FROM 2018 PANORAMA NORTH EXPLORATION PROGRAM

All boreholes have been geophysically logged by Century Wireline Services with a suite of tools including natural gamma, caliper, long and short spaced density, resistivity and deviation.

The borehole details, including collar co-ordinates (NAD 1983, UTM Zone 11N), total depth, collar inclination and azimuth and cumulative apparent coal thicknesses are provided in Table 2. Total cumulative coal thickness and thickest seam intersections in each borehole drilled in 2018 are provided in Table 3.

Table 2: Completed 2018 Drillhole Types, Locations and Total Depths

Drillhole ID	Drill Type	Easting	Northing	Elevation	Total Depth	Azimuth	Dip
DHPN-18-01A	HQ Core	527,440	6,302,923	1,639.99	239.0	0	-90
DHPN-18-02	HQ Core	532,469	6,301,186	1,522.73	151.6	85	-60
DHPN-18-03	HQ Core	530,795	6301219	1,368.47	243.0	0	-90
DHPN-18-04	HQ Core	525,117	6299316	1,483.43	287.9	0	-90
DHPN-18-05	HQ Core	532,571	6298551	1,278.43	275.0	0	-90
DHPN-18-06	HQ Core	532,144	6300124	1,380.60	260.2	0	-90
DHPN-18-07	HQ Core	530,690	6302316	1,681.53	230.0	0	-90
DHPN-18-08	HQ Core	523,383	6303133	1,515.83	263.0	0	-90

Table 3: 2018 Drillhole Cumulative Coal and Thickest Seam Intersection (Apparent)

Drillhole ID	Total Depth (m)	Total Coal Thickness (m)	Thickest Seam (m)
DHPN-18-01A	239.0	9.43	2.47
DHPN-18-02	151.6	6.29	2.35
DHPN-18-03	243.0	7.02	1.41
DHPN-18-04	287.9	13.89	3.96
DHPN-18-05	275.0	0.72	0.64
DHPN-18-06	260.2	5.17	1.17
DHPN-18-07	230.0	9.17	2.24
DHPN-18-08	263.0	3.08	1.51

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Table 4: Correlated Coal Seam Intervals from 2018 Program

Drillhole ID	Coal Seam Name	From (m)	To (m)	Thickness
DHPN-18-01A	CLAW B	104.06	106.53	2.47
	CLAW C	171.27	173.11	1.84
	CLAW E	204.34	204.4	0.06
	SCOW A	226.66	227.11	0.45
DHPN-18-02	CLAW B	51.82	51.99	0.17
	CLAW C	95.91	98.26	2.35
	CLAW E	149.97	150.71	0.74
DHPN-18-03	CLAW C	28.52	29.06	0.54
	CLAW E	50.22	50.35	0.13
	SCOW A	98.26	99	0.74
	SCOW B	130.23	131.01	0.78
	SCOW C	193.79	194.65	0.86
	SCOW D	234.82	236.23	1.41
DHPN-18-04	CLAW B	63.38	67.34	3.96
	CLAW BL	70.75	71.75	1
	CLAW C	97.02	99.72	2.7
	CLAW CL	103.2	103.72	0.52
	CLAW E	136.11	136.55	0.44
	CLAW EL	137.94	138.67	0.73
	SCOW A	168.86	169.6	0.74
	SCOW AL	172.49	172.89	0.4
	SCOW A	172.89	173.66	0.77
	SCOW B	188.7	189.1	0.4
	SCOW C	227.96	229.17	1.21
	SCOW D	264.15	264.95	0.8
DHPN-18-05	SCOW D	39.63	40.27	0.64
DHPN-18-06	CLAW C	21.58	22.75	1.17
	CLAW E	65.71	65.94	0.23
	CLAW EL	67.4	67.61	0.21
	SCOW A	117.98	118.52	0.54
	SCOW C	207.71	208.86	1.15
DHPN-18-07	CLAW B	10.58	10.94	0.36
	CLAW BL	11.43	12.16	0.73
	CLAW C	51.43	53.67	2.24
	CLAW E	85.75	87.55	1.8
	CLAW EL	87.94	88.72	0.78
	SCOW A	132.38	133.44	1.06
	SCOW AL	139.29	139.66	0.37
	SCOW B	155	155.16	0.16
	SCOW C	187.44	187.86	0.42
DHPN-18-08	CLAW B	97.83	98.86	1.03
	CLAW C	137	137.38	0.38
	CLAW E	177.32	177.52	0.2
	SCOW A	200.32	200.6	0.28

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Competent Persons Statement

Exploration Results

The information in this document that relates to Exploration Results of the Panorama North 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 not visited the Panorama North project site before or during the current exploration program.

The JORC Code (2012) Table 1 – 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.*	▪ Coal tenure relates to the Panorama North project, which is a joint venture between Atrum Coal Panorama Inc. (Atrum Coal) and Japan Oil, Gas and Metals National Corporation (JOGMEC). As of March 31st, 2018 JOGMEC holds 21% ownership of each coal licence, with Atrum Coal holding the remaining 79% ▪ The project consists of 12 granted coal licences totalling 7,359 hectares. Security of tenure is not compromised and there are no known impediments ▪ The eight boreholes completed in 2018 were drilled in Coal Permits 417526, 417525, 417084, and 418958.
Exploration by other parties in Elan South Area	▪ *Acknowledgment and appraisal of exploration by other parties.*	▪ Gulf Canada Resources Inc. conducted exploration programs in 1980 and 1981 at Panorama, consisting of helicopter-supported mapping at 1: 10,000 scale and hand-trenching. The hand trenching was implemented to prove the thickness of coal seams and to collect coal quality samples. In total, 96 trenches were logged: 42 from 1980 and 54 from 1981 ▪ All coal seams with a trench thickness greater than 0.50 m were sampled for coal analyses. Samples from both exploration programs underwent vitrinite reflectance analysis by David E. Pearson & Associates Ltd. in Victoria, B.C. The examined coals were concluded to be of anthracite grade (Gulf Canada Resources Inc., 1981). The trench data was utilized to assist in targeting exploration drill holes
Geology	▪ *Deposit type, geological setting and style of mineralisation.*	▪ The Panorama North project lies within the Bowser Basin, which is the largest contiguous basin in the Canadian Cordillera, developed because of tectonic compression and uplift of the Coast Mountains during the Upper Jurassic. ▪ The dominant structural feature is the NW/SE trending Biernes Synclinorium that resulted from northeast-southwest compression during the first phase of deformation ("F1"). Thrusting related to the F1 deformation is more intense in the southern part of the Groundhog Coalfield than in the northern part. The second, less intense, phase of deformation ("F2") resulted from NW/SE compression. The F2 deformation is superimposed on the broad, open type of F1 folding. The F2 imprint is visible in a series of plunge changes in the F1 folds in the order of up to 5°. F2 thrusts are generally flat lying and related to the hanging wall of drag folds. ▪ It is apparent that the structure of the Groundhog Coalfield can range from benign to complex in localised zones due to the two phases of deformation. In broad terms, Panorama's structure is characterised by broad, gentle synclines spanning distances up to 4 km with tightly folded zones on the syncline flanks. It is estimated that the tight folding occurs over narrow zones approximately 500 m to 700 m in width. Strata within these tightly folded zones features complex thrusting, blind thrusts and recumbent folding ▪ Exploration targets within this structural regime are likely to occur in the flat lying synclines between thrusts, however, more complex small deposits of thicker fault accumulated anthracite may also exist in the folded zones.

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Criteria	JORC Code explanation	Commentary
Drill hole Information	▪ *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:* ○ *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.*	▪ This information is provided for all boreholes completed in 2018 at Elan South, in Tables 2, 3 and 4 of this ASX announcement
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.*	▪ No cut-off grades were applied to the exploration results in this announcement, and no coal quality results are reported ▪ Individual coal core samples (HQ size) have been submitted for analytical testing at GWIL Birtley coal laboratory (Calgary)
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 not considered a significant concern for reporting of exploration results at Panorama North ▪ In 2018, all boreholes were drilled vertically (with the exception of DHPN-18-02) and coal seams intersected in boreholes are close to true thickness of the coal seams
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 locations plans are provided along with drill hole locations and seam intersects from the 2018 program ▪ The Competent Person has deemed it would be appropriate to update the geological model before providing updated cross sections and other geological plans in this release
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.*	▪ To ensure balanced reporting of Exploration Results, Tables 2 and 3 include all boreholes drilled in 2018, including cumulative coal thicknesses in all boreholes completed
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 survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	▪ Atrum Coal geologists have undertaken a surface mapping program in 2018, collecting data points from outcrops. 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	▪ *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 2018 program has been completed. The Company is currently planning with JOGMEC the 2019 JV work at Panorama North. ▪ The HQ cores sampled during the 2018 program will be subjected to detailed raw quality sizing and washability test work, including comprehensive testing of clean coal composites ▪ A JORC resource report is also planned for Q1 of 2019.