

## ASX Announcement

19 August 2020

# THICK COAL INTERSECTIONS CONTINUE AT ISOLATION SOUTH

### HIGHLIGHTS

- Strong drilling progress sustained with 102 (of a planned 125) rotary air blast (**RAB**) holes in the 2020 exploration program completed for 17,200 metres of drilling at Isolation South.
- Drilling predominantly focused on Inferred resource areas within the optimised pit shell (identified in the Elan Project Scoping Study); targeting upgrades to resource classification for inclusion in the Pre-Feasibility Study (**PFS**) mine schedule.
- Thick, shallow coal intersections consistently achieved; cumulative apparent coal thicknesses continue to average over 30 metres per hole within the pit shell, starting from as little as 3 metres below surface.
- Particularly significant total apparent coal intersections over the past month include **88.8 metres** in ISRAB20-057, **80.6 metres** in ISRAB20-056 and **76.8 metres** in ISRAB20-055.
- 2020 drilling results to date in-line with Isolation South geological and resource model predictions.
- Coal quality drilling program progressing well with 21 large diameter core (**LDC**) holes and 5 HQ geotechnical and hydrogeological holes completed; strong LDC core recoveries achieved.
- Interim Elan Project resource update on track for 4Q 2020.

Atrum Coal Limited (ASX: ATU) (**Atrum** or the **Company**) is pleased to advise of further results from the 2020 drilling program at its 100%-owned Elan Hard Coking Coal Project (**Elan Project**) in southern Alberta, Canada.

The 2020 exploration program at Isolation South has progressed rapidly with 102 RAB holes completed to date, across a typical spacing of 100 - 200 metres. The final stages of the 2020 RAB program (residual 23 planned holes) are targeting some of the lesser drilled areas around the extremities of the Isolation South pit shell area identified during the Scoping Study. The remaining LDC drilling (residual 11 planned holes) is designed to reduce the spacing between coal quality data points at Isolation South to around 250 metres. Satisfaction of these drilling objectives is expected to drive substantial upgrades in resource classification at Isolation South, coupled with the potential to deliver further total resource growth also.

Atrum Managing Director and CEO, Andrew Caruso, commented: *"The efficiency of the Atrum team and drilling partners on the ground at Elan this year has been impressive. Program delivery, both RAB and coring, has been strong and keeps us well on track for the targeted resource update in 4Q 2020. Most importantly, the results of the 2020 program have to date validated our resource expectations at Isolation South. We have been successful in demonstrating both the continuity and thickness of target coal seams in key Inferred resource areas. These outcomes bode well for the resource update later this year and the mine schedule to be incorporated into the Elan Project PFS due in mid-2021."*

## RAB drilling results

The RAB drilling component of the 2020 field program has continued with consistently strong progress, now reaching the final stages of the program. The first 102 holes have been completed for approximately 17,200 metres of drilling.

Of this total, 94 holes were drilled within the Scoping Study pit shell, reducing the typical hole spacing to 100 - 200 metres in most areas. A program of 8 RAB holes was also conducted to the north of the Scoping Study pit shell, predominantly as sterilisation drilling for potential ex-pit waste dump locations under consideration in the current PFS. The final RAB holes will target areas where thrust faulting occurs.

The results of the RAB program continue to track in-line with expectations. Total apparent coal thickness averages over 30 metres per hole in the Scoping Study pit shell area. This is consistent with expectations from the Isolation South geological and resource models for these domains. The coal intersections are also shallow, with starting depth as low as 3m below surface in areas where the coal is not capped by the Cadomin Formation.

The 2020 drilling to date has confirmed that the coal seams of the Mist Mountain Formation are continuous over the pit shell area identified during the Scoping Study. Total apparent coal thicknesses per hole and starting depths for the 94 holes drilled within the Scoping Study pit shell area are shown in Figure 1 and Appendix A. The same data for the 8 northern scout holes is shown in Appendix A.

The locations of completed RAB (plus LDC and hydrogeology) holes are shown in Figures 2 and 3.

### Northern area

RAB drilling in the North 1 domain has now been completed and is being complemented with LDC holes. The drilling results in this area were generally above expectation with good development of the Seam 3 / Seam 4 groups. Current RAB drilling is targeting some of the lesser explored areas of the North 2 domain; in this area there is no Cadomin Formation overlying the coal and Seam 3 and 4 occur at shallow depths.

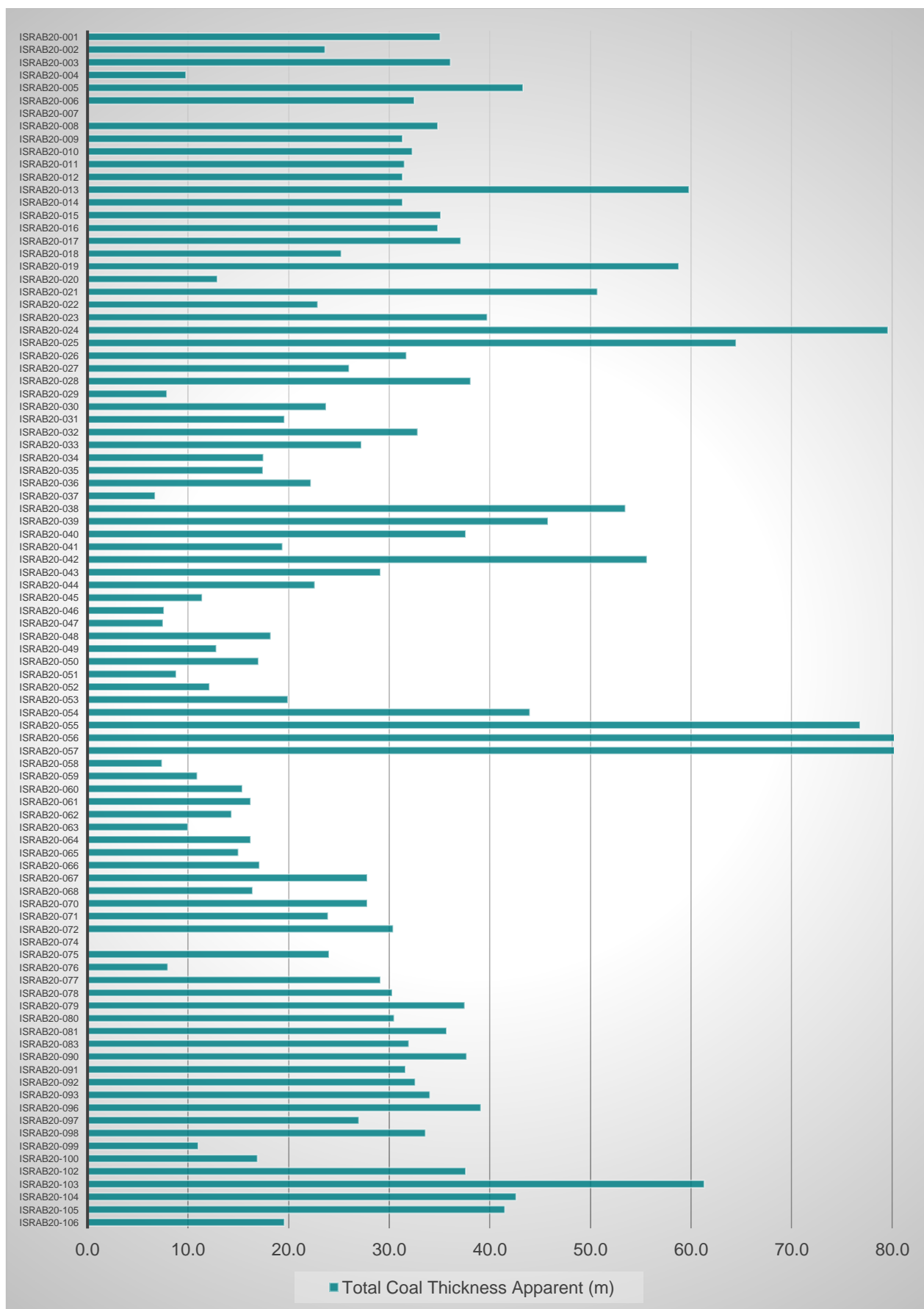
A program of 8 scout RAB holes was also conducted to the north of the Scoping Study pit shell area (North 3 domain), predominantly as sterilisation drilling for possible ex-pit waste dump locations under consideration in the current PFS. This drilling confirmed existing surface mapping in this area and showed limited resource potential for this area. 4 of the RAB holes in this area contained remnant Seam 4 coal seams and 4 were barren.

### Central area

The Central 2 domain has yielded better results than expected. It was previously anticipated that a small valley associated with Manystick Creek had resulted in an area of erosion. However, drilling in this area has consistently encountered thick coal occurrences.

Holes drilled in this area show evidence of both structural thickening and thrust repeated coal seams. A prime example is hole ISRAB20-057, which intersected 88.8 metres of total coal. This included a thick Seam 3 interval between 39 to 95 metres depth and another thick Seam 3 interval (fault repeat) between 116 to 142 metres depth.

Despite being structurally complex, drilling in the Central 2 domain has demonstrated thick coal seams at shallow depths that may be prioritised for rapid access to early coal when developing the mining sequence in the current PFS.



**Figure 1: Total apparent coal thicknesses (94 holes completed on Cabin Ridge)**

## Southern area

Continuation of RAB drilling in the southern areas (South 1, 2 and 3 domains) tested the central to southern parts of the area known as the dip slope. This included in-filling some existing gaps and structurally complex areas, as well as testing the Inferred resource areas towards the ridgeline. The drilling results were generally within expected ranges based on the 2019 exploration, with total coal thicknesses often varying based on the variability exhibited in Seam 3 and 4. Seams 1 and 2 remain very consistent and unaffected by faulting, while Seams 3 and 4 are affected by structural thickening or low angle faulting.

## LDC drilling results

Solid progress has been made on the LDC program in the last month. The two LD coring rigs have been infilling the Central and Northern domains with 21 LDC holes (of the 32-hole program) now completed. The distribution of LDC holes is improving substantially, with the program designed to reduce the spacing between coal quality data points to 250 metres or less within the Scoping Study pit shell area.

Success with the large diameter (6") method of coal coring continues, with excellent core recovery reported for most holes (core recoveries are provided up to ISLD20-16 in Appendix A).

The LDC program, and associated coal quality testwork, aims to demonstrate continuity of coal quality characteristics over the Isolation South area. The data acquired from the coal quality testwork will feed into the Coal Handling and Preparation Plant (**CHPP**) design, and determination of practical processing yield, product specification and optimisation within the current PFS.

Coal cores from the LDC program are progressively being sampled and submitted to GWIL Birtley in Calgary for commencement of detailed coal quality, washability and clean coal laboratory testwork. Clean coal composites are prepared by Birtley and forwarded to COALTECH Petrographic Associates, USA (for clean coal characterisation tests). Blended products are designed by Atrium and prepared by Birtley for delivery to coal carbonisation laboratories in Europe; DMT Coal Coke Group (Germany) and INCAR (Spain).

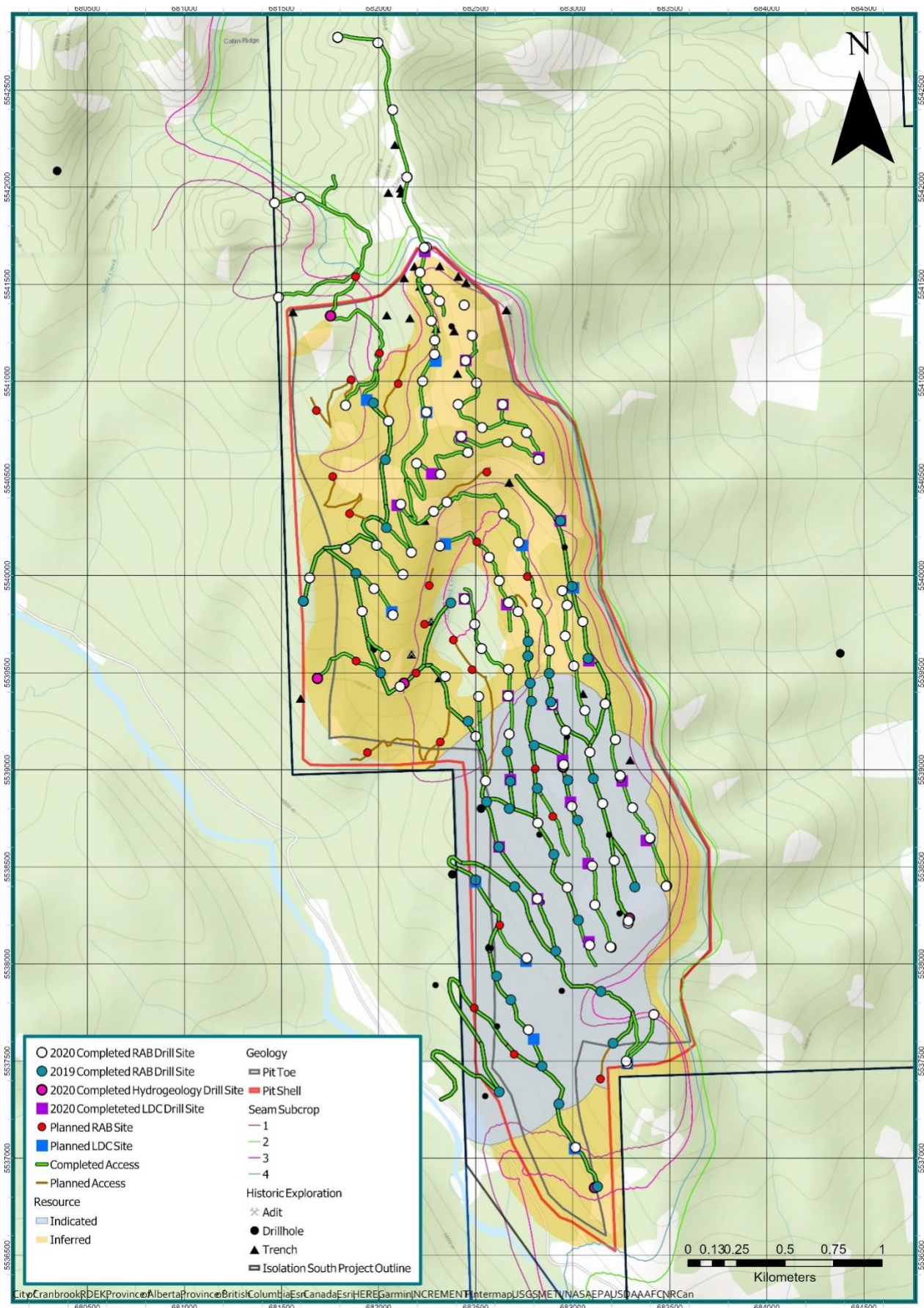
## Hydrogeology and geotechnical program

Five multi-purpose hydrogeological / geotechnical holes have also been completed in the 2020 program. These boreholes are fully cored (HQ size) from the surface and are used for the assessment and monitoring of groundwater aquifers. Vibrating wire piezometers (VWPs) are being installed for the measurement of pore water pressures.

The HQ core samples are also used for geotechnical logging, sampling and testing, with the overall geotechnical program oversight provided by Golder Associates. HQ coal core samples with sufficient core recovery (minimum 80% linear recovery per seam / ply) are also being sampled and submitted for coal quality and washability testing.

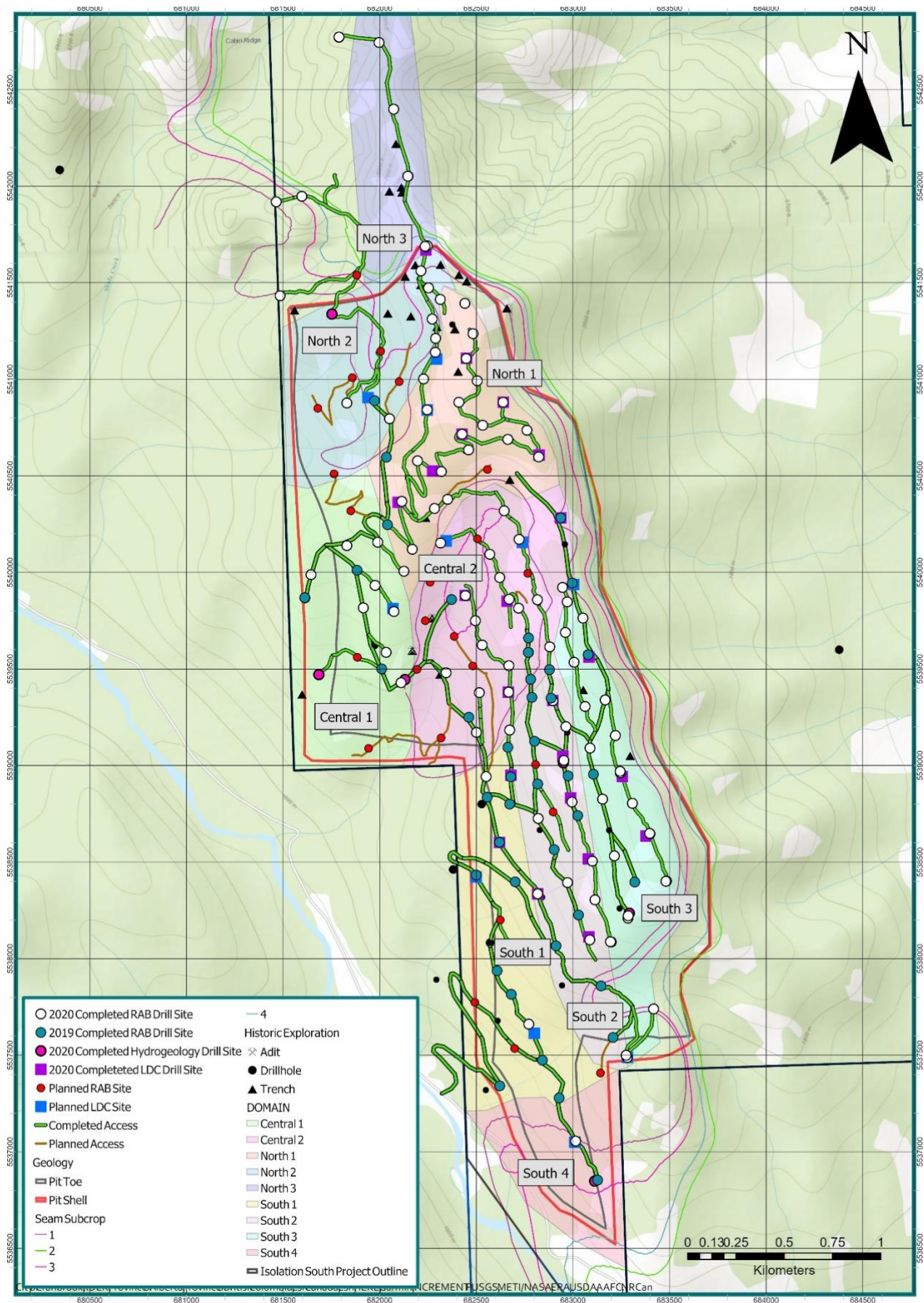
Geophysical survey companies, DMT Geosciences Ltd (DMT) and Explor Geophysical Ltd (Explor), are currently on site to independently conduct trial 2D lines for the upcoming seismic program. The most suitable seismic source type for the terrain, and the quality of the seismic data acquired will be key considerations for selection for the implementation of the 17 line-kilometre program. The 2D seismic program is set to assist in the interpretation of structural features, including thrust faults that result in stacking and the structurally thickened coal zones observed in some zones.





**Figure 2: Location of 2020 RAB, LDC and HQ holes – completed and planned**





**Figure 3: Location of 2020 RAB, LDC and HQ holes with geological domains**

**This ASX release was authorised on behalf of the Atrum Coal Board by:**

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## 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 resource estimate of 454Mt (142Mt Indicated and 312Mt Inferred). Comprehensive coal quality testing from the 2018 and 2019 exploration programs, combined with review of substantial historical testwork data for the broader Elan Project, has confirmed Tier 1 HCC quality.

Elan 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. It shares its southern boundary with Riversdale Resources' Grassy Mountain Project, which is in the final permitting stage for a 4.5 Mtpa (saleable) open-cut HCC operation. Around 30km to the west, Teck Resources operates four mines (the Elk Valley complex) producing approximately 25Mtpa of premium HCC for the seaborne market.

Atrum completed a Scoping Study in April 2020 which demonstrated the strong technical and economic viability of development of the Elan Project. For full Scoping Study and resource details refer to Atrum ASX release dated 16 April 2020, *Elan Project Scoping Study*. Atrum confirms that all material assumptions underpinning the production target and forecast financial information within the Scoping Study, and the resource estimate outlined above, continue to apply and have not materially changed.

## APPENDIX A: DRILLING RESULTS

### RAB hole details and total apparent coal thickness (Scoping Study pit shell area)

Hole Name	Drill Type	Easting	Northing	Elevation	Total Depth	Azi	Dip	Total Coal Thickness Apparent (m)	Start Depth of Coal (m)
ISAB20-001	RAB	682,550	5,538,942	1,843	163.6	0	-90	35.1	17.3
ISAB20-002	RAB	682,499	5,539,170	1,821	89.2	0	-90	23.6	3.9
ISAB20-003	RAB	682,111	5,539,429	1,813	176.2	0	-90	36.1	10.7
ISAB20-004	RAB	681,915	5,539,817	1,903	236.4	0	-90	9.8	216.0
ISAB20-005	RAB	682,033	5,539,586	2,036	293.6	0	-90	43.3	94.3
ISAB20-006	RAB	682,136	5,540,003	1,994	266.8	0	-90	32.5	44.1
ISAB20-007	RAB	681,640	5,540,001	1,940	335.3	0	-90	-	-
ISAB20-008	RAB	682,073	5,539,797	1,945	197.5	0	-90	34.8	54.9
ISAB20-009	RAB	682,115	5,540,368	2,074	177.2	0	-90	31.3	40.8
ISAB20-010	RAB	682,195	5,540,578	2,158	196.0	0	-90	32.3	46.5
ISAB20-011	RAB	682,673	5,539,184	1,913	135.2	0	-90	31.5	16.1
ISAB20-012	RAB	682,460	5,540,635	2,201	173.6	0	-90	31.3	61.0
ISAB20-013	RAB	682,639	5,540,881	2,252	204.9	0	-90	59.8	58.0
ISAB20-014	RAB	682,675	5,539,367	1,910	143.9	0	-90	31.3	41.7
ISAB20-015	RAB	682,410	5,540,882	2,264	183.5	0	-90	35.1	64.0
ISAB20-016	RAB	682,637	5,539,510	1,899	137.6	0	-90	34.8	4.0
ISAB20-017	RAB	682,504	5,540,992	2,280	213.2	0	-90	37.1	68.7
ISAB20-018	RAB	682,482	5,541,236	2,314	213.0	0	-90	25.3	109.0
ISAB20-019	RAB	682,533	5,540,762	2,245	212.1	0	-90	58.8	55.1
ISAB20-020	RAB	682,823	5,540,598	2,237	218.9	0	-90	12.9	50.2
ISAB20-021	RAB	682,637	5,540,668	2,223	210.9	0	-90	50.7	48.4
ISAB20-022	RAB	682,747	5,540,751	2,244	216.2	0	-90	22.9	48.2
ISAB20-023	RAB	682,319	5,540,522	2,175	213.2	0	-90	39.8	50.6
ISAB20-024	RAB	682,722	5,540,171	2,045	209.0	0	-90	79.6	36.6
ISAB20-025	RAB	682,644	5,540,319	2,049	128.1	0	-90	64.5	2.9
ISAB20-026	RAB	682,169	5,540,120	2,038	175.0	0	-90	31.7	34.0
ISAB20-027	RAB	681,838	5,540,907	2,002	160.3	0	-90	26.0	6.5
ISAB20-028	RAB	682,471	5,540,415	2,096	183.1	0	-90	38.1	8.6
ISAB20-029	RAB	682,285	5,540,331	2,089	61.7	0	-90	7.9	5.4
ISAB20-030	RAB	682,051	5,540,796	2,070	92.1	0	-90	23.7	17.2
ISAB20-031	RAB	681,810	5,540,152	1,979	296.8	65	-60	19.6	154.1
ISAB20-032	RAB	681,989	5,540,156	2,014	228.6	0	-90	32.8	63.8
ISAB20-033	RAB	681,977	5,539,933	1,949	264.9	0	-90	27.2	80.8
ISAB20-034	RAB	682,343	5,539,480	1,796	181.1	0	-90	17.5	0.4
ISAB20-035	RAB	682,530	5,539,624	1,897	87.5	0	-90	17.4	14.1
ISAB20-036	RAB	682,495	5,539,750	1,899	204.7	0	-90	22.2	12.3
ISAB20-037	RAB	682,443	5,539,880	1,899	133.0	0	-90	6.7	11.0
ISAB20-038	RAB	682,809	5,538,716	1,911	228.5	0	-90	53.5	42.3
ISAB20-039	RAB	682,972	5,538,394	1,904	206.6	0	-90	45.8	32.5
ISAB20-040	RAB	683,101	5,538,504	1,977	191.2	0	-90	37.6	37.8
ISAB20-041	RAB	682,995	5,538,811	1,976	160.3	0	-90	19.4	42.9
ISAB20-042	RAB	682,953	5,539,026	1,990	181.6	0	-90	55.6	42.6
ISAB20-043	RAB	683,089	5,539,091	2,042	169.9	0	-90	29.1	37.0
ISAB20-044	RAB	683,215	5,538,532	2,028	185.9	0	-90	22.6	36.0
ISAB20-045	RAB	683,154	5,538,826	2,042	200.0	0	-90	11.4	35.8
ISAB20-046	RAB	683,162	5,539,329	2,076	124.0	0	-90	7.6	55.2
ISAB20-047	RAB	683,052	5,539,763	2,110	133.9	0	-90	7.5	56.6



Hole Name	Drill Type	Easting	Northing	Elevation	Total Depth	Azi	Dip	Total Coal Thickness Apparent (m)	Start Depth of Coal (m)
ISRAB20-048	RAB	682,946	5,539,922	2,094	123.4	0	-90	18.2	5.8
ISRAB20-049	RAB	682,954	5,539,839	2,101	153.5	0	-90	12.8	88.0
ISRAB20-050	RAB	682,997	5,539,542	2,083	157.8	0	-90	17.0	34.5
ISRAB20-051	RAB	682,958	5,539,731	2,094	156.1	0	-90	8.8	32.9
ISRAB20-052	RAB	683,025	5,539,362	2,066	154.1	0	-90	12.1	32.7
ISRAB20-053	RAB	682,315	5,540,152	2,012	179.5	0	-90	19.9	9.2
ISRAB20-054	RAB	682,570	5,540,094	1,991	201.0	0	-90	44.0	7.3
ISRAB20-055	RAB	682,621	5,539,973	1,989	201.0	0	-90	76.8	3.0
ISRAB20-056	RAB	682,669	5,539,861	1,977	200.2	0	-90	80.6	12.2
ISRAB20-057	RAB	682,766	5,539,217	1,953	175.2	0	-90	88.8	28.5
ISRAB20-058	RAB	683,203	5,539,157	2,061	122.0	0	-90	7.4	34.1
ISRAB20-059	RAB	683,313	5,538,788	2,096	94.5	0	-90	10.9	25.4
ISRAB20-060	RAB	683,376	5,538,634	2,107	137.2	75	-60	15.4	20.6
ISRAB20-061	RAB	683,484	5,538,402	2,115	152.4	0	-90	16.2	21.3
ISRAB20-062	RAB	683,484	5,538,402	2,115	134.1	180	-60	14.3	28.2
ISRAB20-063	RAB	683,245	5,538,962	2,086	106.0	75	-60	10.0	17.2
ISRAB20-064	RAB	683,285	5,538,210	2,016	151.6	180	-60	16.2	45.6
ISRAB20-065	RAB	683,285	5,538,210	2,016	136.9	0	-90	15.0	29.0
ISRAB20-066	RAB	683,197	5,538,086	1,950	242.7	0	-90	17.1	34.3
ISRAB20-067	RAB	683,135	5,538,292	1,957	237.9	0	-90	27.8	37.1
ISRAB20-068	RAB	683,198	5,538,086	1,936	195.9	0	-90	16.4	30.2
ISRAB20-070	RAB	682,858	5,538,257	1,859	191.5	0	-90	27.8	42.8
ISRAB20-071	RAB	682,763	5,538,031	1,803	239.9	0	-90	23.9	43.6
ISRAB20-072	RAB	682,795	5,537,617	1,687	209.1	0	-90	30.4	10.7
ISRAB20-074	RAB	683,415	5,537,750	1,856	86.3	0	-90	-	-
ISRAB20-075	RAB	683,275	5,537,500	1,835	203.7	0	-90	24.0	68.6
ISRAB20-076	RAB	682,518	5,539,306	1,827	63.2	0	-90	8.0	15.0
ISRAB20-077	RAB	682,274	5,541,121	2,204	216.5	0	-90	29.1	17.3
ISRAB20-078	RAB	682,221	5,540,984	2,177	123.4	0	-90	30.3	5.8
ISRAB20-079	RAB	682,285	5,541,211	2,210	123.4	0	-90	37.5	9.5
ISRAB20-080	RAB	682,272	5,541,342	2,217	99.1	0	-90	30.5	3.2
ISRAB20-081	RAB	682,258	5,541,470	2,240	150.4	0	-90	35.7	3.9
ISRAB20-083	RAB	682,232	5,541,683	2,204	96.0	0	-90	32.0	2.1
ISRAB20-090	RAB	682,240	5,541,686	2,206	114.9	65	-65	37.7	12.0
ISRAB20-091	RAB	682,240	5,541,686	2,206	117.8	245	-60	31.6	6.6
ISRAB20-092	RAB	682,213	5,541,561	2,223	147.0	0	-90	32.6	2.8
ISRAB20-093	RAB	682,246	5,540,841	2,182	108.6	0	-90	34.0	4.9
ISRAB20-096	RAB	682,966	5,539,107	2,011	243.8	0	-90	39.1	40.4
ISRAB20-097	RAB	682,866	5,539,624	2,035	213.4	0	-90	27.0	6.3
ISRAB20-098	RAB	682,896	5,539,336	2,009	216.4	0	-90	33.6	34.6
ISRAB20-099	RAB	683,398	5,538,648	2,110	110.2	0	-90	11.0	22.9
ISRAB20-100	RAB	683,244	5,538,970	2,074	121.5	0	-90	16.9	20.4
ISRAB20-102	RAB	682,426	5,540,716	2,223	244.4	0	-90	37.6	63.1
ISRAB20-103	RAB	682,434	5,541,370	2,293	222.6	0	-90	61.3	71.5
ISRAB20-104	RAB	682,448	5,541,108	2,279	269.6	0	-90	42.6	83.4
ISRAB20-105	RAB	683,087	5,538,097	1,914	219.3	0	-90	41.5	35.0
ISRAB20-106	RAB	683,014	5,537,056	1,654	185.0	0	-90	19.6	17.0

### RAB hole details and total apparent coal thickness (Northern extension area)

Drillhole ID	Drill Type	Easting	Northing	Elevation	Total Depth	Azi	Dip	Total Coal Thickness Apparent (m)	Start Depth of Coal (m)
ISRAB20-084	RAB	682,151	5,542,049	2,137	106.7	0	-90	3.6	3.2
ISRAB20-085	RAB	682,063	5,542,405	2,092	91.4	0	-90	1.3	4.7
ISRAB20-086	RAB	681,790	5,542,771	2,010	25.4	0	-90	0.0	-
ISRAB20-087	RAB	681,790	5,542,773	2,010	87.2	65	-60	0.0	-
ISRAB20-088	RAB	681,997	5,542,744	2,078	29.7	90	-60	0.0	-
ISRAB20-089	RAB	682,146	5,542,052	2,138	134.3	245	-60	10.1	4.8
ISRAB20-094	RAB	681,464	5,541,919	2,003	111.0	70	-55	0.0	-
ISRAB20-095	RAB	681,597	5,541,947	2,003	66.6	0	-90	10.8	14.8

### Completed LDC drill holes

Hole Name	Drill Type	Easting	Northing	Elevation	Total Depth	Twins RAB Hole
ISLD20-01	LDC	683,141	5,537,859	1,813	81	ISRAB19-49
ISLD20-02	LDC	682,676	5,538,951	1,885	117	ISRAB19-47
ISLD20-03	LDC	682,498	5,538,425	1,767	114	ISRAB19-50
ISLD20-04	LDC	682,620	5,538,602	1,836	152	ISRAB19-48
ISLD20-04B	LDC	682,628	5,538,582	1,832	155	ISRAB19-48
ISLD20-05	LDC	682,953	5,539,030	1,973	163	ISRAB20-042
ISLD20-06	LDC	682,993	5,538,814	1,963	132	ISRAB20-041
ISLD20-07	LDC	683,062	5,538,615	1,962	147	ISRAB19-17
ISLD20-08	LDC	682,828	5,538,319	1,835	176	ISRAB20-070
ISLD20-09	LDC	682,909	5,540,311	2,144	102	ISRAB19-23
ISLD20-10	LDC	683,072	5,539,583	2,100	122	ISRAB19-35
ISLD20-11	LDC	682,462	5,541,109	2,279	261	ISRAB20-104
ISLD20-12	LDC	682,634	5,540,874	2,238	217	ISRAB20-013
ISLD20-13	LDC	682,666	5,539,851	1,964	62	ISRAB20-056
ISLD20-14	LDC	682,820	5,540,605	2,223	182	ISRAB20-020
ISLD20-15	LDC	683,400	5,538,637	2,105	88	ISRAB20-060
ISLD20-16	LDC	683,249	5,538,957	2,073	116	ISRAB20-063
ISLD20-17	LDC	682,439	5,540,709	2,208	183	ISRAB20-102
ISLD20-18	LDC	682,893	5,539,334	2,009	164	ISRAB20-098
ISLD20-19	LDC	682,666	5,539,380	1,912	75	ISRAB20-014
ISLD20-20	LDC	682,274	5,540,524	2,159	168	ISRAB20-023
ISLD20-21	LDC	682,443	5,539,880	1,917	24	ISRAB20-037

**LDC core recoveries (linear recovery relative to geophysical log thickness)**

HOLE NAME	SEAM GROUP	RECOVERY	HOLE NAME	SEAM GROUP	RECOVERY
ISLD20-02	Seam 1	100%	ISLD20-11	Seam 1	56%
	Seam 2	100%		Seam 2	88%
	Seam 3 Upper	100%		Seam 3 Upper	71%
	Seam 3 Lower	100%		Seam 3 Lower	88%
	Seam 4	85%		Seam 4	100%
ISLD20-04	Seam 1	94%	ISLD20-12	Seam 1	100%
	Seam 2	71%		Seam 2	98%
	Seam 3	82%		Seam 3 Upper	100%
ISLD20-04B	Seam 3 Upper	100%		Seam 3 Lower	99%
	Seam 3 Lower	81%		Seam 4	100%
ISLD20-05	Seam 1	100%	ISLD20-13	Seam 3 Upper	97%
	Seam 2	100%		Seam 3 Lower	77%
	Seam 3	100%		Seam 4	85%
ISLD20-06	Seam 1	100%	ISLD20-14	Seam 1	88%
	Seam 2	100%		Seam 2	100%
	Seam 3 Upper	78%		Seam 3 Upper	100%
	Seam 3 Lower	100%		Seam 3 Lower	100%
ISLD20-07	Seam 1	100%	ISLD20-15	Seam 4	88%
	Seam 2	100%		Seam 1	100%
	Seam 3	100%		Seam 2	100%
ISLD20-08	Seam 1	100%	ISLD20-16	Seam 3 Upper	100%
	Seam 3 Upper	57%		Seam 1	100%
	Seam 3 Lower	86%		Seam 2	100%
ISLD20-09	Seam 2	100%		Seam 3 Upper	95%
	Seam 3	100%		Seam 3 Lower	97%
ISLD20-10	Seam 1	100%			
	Seam 2	89%			
	Seam 3 Upper	100%			
	Seam 3 Lower	81%			

## APPENDIX B: JORC TABLES

### Competent Persons Statement

#### Exploration Results

The information in this document that relates to Exploration Results for the Isolation 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 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"> <li>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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> </ul>	<ul style="list-style-type: none"> <li>21 cored drillholes have been completed 2020 at Isolation South for the collection of large diameter (LD) samples which are logged and sampled for coal quality testwork</li> <li>Sampling has been undertaken on LD (150mm or 6" diameter) cored holes, as well as HQ core samples from hydrogeology holes</li> <li>Samples are taken on ply intervals and are manually composited in the laboratory after results for raw light transmittance (LT) ash, ARD and IM are received from grab samples</li> <li>Atrum Coal provides the instructions to the laboratory for manually compositing individual ply samples</li> <li>In order to ensure representivity, coal seams sampled with &lt;80% linear core recovery are not tested at the laboratory</li> <li>From the 102 RAB holes completed to date in the 2020 program, open cut cuttings have been sampled at 1m depth intervals. These samples are not intended to be used for coal quality testwork</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>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).</li> </ul>	<ul style="list-style-type: none"> <li>Four LD holes were completed in February 2020 and an additional 17 holes drilled between June and August 2020</li> <li>The LD cored holes are drilled with PDC or tungsten bits and use double tube core barrels (triple tube core barrels with LD core are uncommon in Canada)</li> <li>The LD holes were geophysically logged to total depth in the open hole, with seam and sample intervals adjusted to the geophysical log depths (where necessary)</li> <li>The 102 RAB completed in 2020 are percussion (rotary air blast) boreholes with a 4 1/2" diameter hammer drill bit</li> <li>All of the boreholes completed in 2020 were geophysically logged to total depth in the open hole, or through HQ drill pipe in the event of severe hold instability</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The LD cored boreholes were geophysically logged and cored seam intervals have compared to the geophysical log data</li> <li>Achieving consistently high core recoveries can be difficult due to the fractured and friable nature of the coal seams</li> <li>The LD coring programs at Elan have generally achieved better core recoveries than PQ or HQ cores, and appears to be a more suitable coring technique for this type of coal</li> <li>Core recoveries were recorded and cumulative tallies kept. Any samples from seams with less than 80% linear recovery (relative to geophysical log depths) are not tested</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>by the laboratory</li> <li>Core boreholes were geophysically logged to ensure recovered core lengths are representative of the full seam</li> </ul>
Logging	<ul style="list-style-type: none"> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>Core samples were logged in detail including lithology, brightness, sedimentary features and defects</li> <li>Boreholes were geophysically logged with downhole tools including long and short spaced density, caliper and gamma, sonic, deviation and dipmeter</li> <li>The seam intervals in RAB holes have been determined from the geophysical log signatures</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>All core sampled is sent to the testing lab (no slabbing or splitting of core is undertaken)</li> <li>The LD cores are subject to drop shatter testing, sizing analysis and subjected to float sink testing by size fraction (50mm x 4mm, 4mm x 1mm, 1.0mm x 0.25mm and - 0.25mm), with raw coal analysis being undertaken after completion of the initial drop shatter and dry sizing.</li> <li>Clean coal composites are typically prepared at selected cut-points for each size fraction as directed by Atrum Coal, for detailed coal quality and carbonisation testing.</li> <li>Carbonisation samples are generally seam blend composites, with varying proportions of each seam group, as directed by Atrum Coal</li> <li>The LD core provides a much better representation of size fractions relative to smaller diameter core samples and is preferred for coal preparation design</li> </ul>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>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.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Analytical testwork (raw, washability and initial clean coal testing) undertaken by 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.</li> <li>The Competent Person undertook a site visit and tour of the GWIL Birtley laboratory in 2018</li> <li>Drop shatter, sizing analysis and float sink testing is undertaken on LD samples according to testing protocols designed by Atrum Coal</li> <li>Clean coal composites are prepared by Birtley and forwarded to COALTECH Petrographic Associates, USA (for clean coal characterisation tests)</li> <li>Blended products are designed by Atrum and prepared by Birtley for delivery to two world-class coal carbonisation laboratories in Europe; DMT Coal Coke Group (Germany) and INCAR (Spain)</li> </ul>
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul style="list-style-type: none"> <li>Geological data is collected in line with Atrum Coal's exploration procedures and guidelines</li> <li>Sample interval depths are as measured by the field geologist (drillers depths), and adjusted to align with geophysical log depths, while measured sample interval thicknesses are retained</li> <li>GWIL Birtley undertakes preliminary checks of assay data using regression analysis, and the data is checked by Atrum Coal and Palaris geologists</li> <li>All data has been encoded, collated and cross checked by Atrum Coal, and later by Palaris</li> <li>Twinning of existing rotary air blast (RAB) holes is used for targeted coring of coal seams in the LD cored holes. The twinned cored holes are also geophysically logged</li> <li>Reported results in this announcement have not been adjusted in any way, shape or form</li> </ul>
Location of data points	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The collar locations of the LD boreholes have been surveyed using DGPS (Trimble)</li> <li>The co-ordinate system is UTM projected grid NAD83 Zone 11N</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>The topographical surface is sourced from a LiDAR survey and has a reasonable correlation with borehole collars (a new LiDAR survey is being flown)</li> <li>RAB hole collars and borehole details are provided in Appendix A of this announcement</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>RAB hole density has been increased to a typical spacing of 100 – 200 metres between holes in most areas</li> <li>The 21 LD holes drilled are located within the Scoping Study pit shell area of Isolation South and are typically spaced at approximately 250m apart</li> <li>Resource classification and estimation will be revisited at the end of this year's drilling program</li> <li>Sample compositing (into seam intervals) is generally manually undertaken in the laboratory after instructions are provided by Atrum Coal.</li> <li>Additional compositing is undertaken in Minex software and requires 80% linear recovery as specified in the Minex BHDB settings, while composite values are mass weighted using both thickness and true RD as weighting variables</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The 21 LD holes completed in 2020 have been drilled vertically, twinning existing vertical RAB holes</li> <li>The RAB holes completed in 2020 are mostly vertical, with some inclined holes as shown in the borehole collar table in Appendix 1</li> <li>Electronic deviation data from each hole is imported into the Minex borehole database. The geological modelling software captures the downhole inclination and deviation, and structural modelling assists in correcting the apparent seam thicknesses to true thicknesses in model grids</li> <li>3D representation is relatively good with the 2020 infill program, and will improve with ongoing infill drilling and the 2D seismic program to be undertaken</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>The LD core is photographed, sampled, labelled and bagged before being submitted to the testing laboratories</li> <li>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</li> <li>The laboratory records provided include sample identification numbers and weighed sample mass</li> <li>All measures are taken to ensure sample security represents best practice by industry standards</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>Palaris representatives visited the site in 2018 and 2019 to oversee the drilling program, and ensure a high standard of geological data is provided by Atrum Coal's geologists</li> <li>Processing consultants Sedgman have reviewed and provided input into the sizing and washability components of the testing program</li> </ul>

**Table 1 – Reporting of Exploration Results**

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The Isolation South coal agreements 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)</li> <li>The Property falls within the Rocky Mountain Forest Reserve, which is managed by the Alberta Government</li> <li>An Exploration Permit for Isolation South was granted to Atrum Coal by the Alberta Energy Regulator (AER) covering exploration activities undertaken in February 2020 (as reported to the ASX on 29 July 2019)</li> </ul>
Exploration by other parties	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>Scurry-Rainbow Oil Limited (Scurry) undertook exploration of the Isolation South area in the 1970s, then referred to as the Oldman River prospect.</li> </ul>

Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>Exploration activities included bulldozer assisted trenching, establishment of access roads, numerous adits and 19 HQ size fully cored holes for a total of 3,286m of coring.</li> <li>The cored holes were accompanied by geophysical logging and seam intervals interpreted from geophysical log depths</li> </ul>
Geology	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>Atrum Coal's Elan project is located in the province of Alberta, in the Crowsnest Pass area of the Crowsnest Coalfield, on the Front Ranges of the Canadian Rocky Mountains</li> <li>Coal-bearing sedimentary sequences occur within the Mist Mountain Formation of the Late Jurassic to Early Cretaceous aged Kootenay Group, which was strongly deformed during the Late Cretaceous Laramide Orogeny. This resulted in the development of north to northwest-trending folds and steeply dipping reverse faults. The project is located within the Rocky Mountain Thrust Belt, west of the Livingstone Thrust fault and the project extent encompasses the McConnell thrust sheet</li> <li>Major folds regionally trend in a northerly direction. Secondary local thrusts typically occur within the area, generally determining the distribution and outcrop of coal seams along the thrust fault zones. In many areas of the Crowsnest Coalfield, structure is principally the controlling factor in resource development.</li> </ul>
Drill hole Information	<ul style="list-style-type: none"> <li><i>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:</i> <ul style="list-style-type: none"> <li><i>easting and northing of the drill hole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>down hole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>This information is provided for all RAB and LDC holes completed in 2020 at Isolation South, in Appendix 1 of this ASX announcement</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> <li><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<ul style="list-style-type: none"> <li>No cut-off grades were applied to the exploration results in this announcement</li> <li>No coal quality results are presented in this announcement</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>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').</i></li> </ul>	<ul style="list-style-type: none"> <li>The results tabulated in this announcement are apparent thicknesses as recorded in vertical drill holes and may be different to the true thickness of the seams</li> <li>Seam dips are generally moderate (25 degrees) to the west at Isolation South</li> <li>More work will need to be undertaken to determine true seam thickness; this will be addressed through use of borehole deviation survey data, seismic survey, and updated structural interpretation / fault modelling</li> </ul>
Diagrams	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Previous ASX announcements have provided progressive updates on Exploration Results and Coal Resources at Isolation South</li> <li>Borehole locations plans are provided along with drill hole locations from the 2020 program</li> <li>Work has commenced on updating geological models incorporating the recent drilling results</li> </ul>
Balanced reporting	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>To ensure balance reporting of Exploration Results, the coal quality results include all clean coal composites tested at Isolation South in 2020</li> <li>To ensure balance reporting of Exploration Results, Appendix 1 includes the results for all RAB holes drilled at Isolation South in 2020</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>A 2D seismic survey is planned with trial lines being run as of 18<sup>th</sup> August 2020</li> <li>Previous ASX announcements have provided progressive updates on Exploration Results and Coal Resources at Isolation South</li> <li>Atrum Coal geologists have undertaken a significant surface mapping program in 2019, collecting data points from outcrops of the Cadomin Formation and coal seams of the Mist Mountain Formation</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul style="list-style-type: none"> <li>A further 23 RAB holes are planned to be completed as part of the current 125-hole program</li> <li>The drilling of LD cored holes will be continued as part of the current exploration program, with 32 LD holes to be completed at Isolation South in 2020</li> <li>A 2D seismic survey is planned for August – September 2020</li> <li>Cored boreholes will be a main priority in 2020 to support geotechnical, coal quality and washability requirements to support the planned PFS</li> <li>Palaris continues with the interpretation of data and updating 3D geological models of Isolation South, with an update to the resource estimate planned for Q4 2020.</li> </ul>