As filed with the Securities and Exchange Commission on January 4, 2024

No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

ADVANCED EMISSIONS SOLUTIONS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**2890**	**27-5472457**
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

8051 E. Maplewood Ave., Suite 210
Greenwood Village, CO 80111
(720) 598-3500

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Robert Rasmus
Chief Executive Officer
8051 E. Maplewood Ave., Suite 210
Greenwood Village, CO 80111
(720) 598-3500

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Jonathan Whalen
Gibson, Dunn & Crutcher LLP
2001 Ross Ave., Suite 2100
Dallas, TX 75201
(214) 698-3196

Approximate date of commencement of proposed sale of the securities to the public:
As soon as practicable after the effectiveness of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☒

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐	Accelerated filer ☐	Non-accelerated filer ☒	Smaller reporting company ☒	Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. ☐

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. The securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

Subject to completion,
Preliminary Prospectus dated January 4, 2024

PROSPECTUS

10,709,755 Shares

Advanced Emissions Solutions, Inc.
Advancing Cleaner Energy

Advanced Emissions Solutions, Inc.

Common Stock

The selling stockholders identified in this prospectus may offer and sell, from time to time, in one or more offerings, up to 10,709,755 shares of our common stock, which number consists of (i) 10,384,298 shares of our common stock currently held by the selling stockholders identified in this prospectus and (ii) 325,457 shares of our common stock issuable upon exercise of a warrant to purchase our common stock (the "Warrant") held by a selling stockholder identified in this process. We are not selling any common stock under this prospectus and will not receive any proceeds from the sale of the shares by the selling stockholders. You should carefully read this prospectus and any accompanying prospectus supplement before you decide to invest in the shares that may be offered under this prospectus.

The distribution of the common stock by the selling stockholders may be effected from time to time by a variety of methods, including:

- in underwritten public offerings;
- in ordinary brokerage transactions on securities exchanges, including the Nasdaq Global Market;
- to or through brokers or dealers who may act as principal or agent; or
- in one or more negotiated transactions at prevailing market prices or negotiated prices.

The brokers or dealers through or to whom the shares of common stock may be sold may be deemed underwriters of the shares within the meaning of the Securities Act of 1933, as amended, in which event all brokerage commissions or discounts and other compensation received by those brokers or dealers may be deemed to be underwriting compensation. To the extent required, the names of any underwriters and applicable commissions or discounts and any other required information with respect to any particular sale will be set forth in an accompanying prospectus supplement. See "*Plan of Distribution"* for a further description of how the selling stockholders may dispose of the shares covered by this prospectus.

Our common stock is listed on the Nasdaq Global Market ("Nasdaq") under the symbol "ADES." On December 29, 2023, the last reported sales price of a share of our common stock on Nasdaq was $2.98.

Investing in our common stock involves risks. See the section titled "Risk Factors," beginning on page 3 for a discussion of information that should be considered in connection with an investment in our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is , 2023.

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ABOUT THIS PROSPECTUS

This prospectus is part of the registration statement that we filed with the U.S. Securities and Exchange Commission (the "SEC"), using a "shelf" registration process. Under this shelf registration process, the selling stockholders may, from time to time, offer and sell certain shares of our common stock in one or more offerings. When a selling stockholder sells shares of common stock under this shelf registration process, we may provide a prospectus supplement that will contain more specific information about the terms of such offering. The prospectus supplement may also add to, update or change any of the information contained in this prospectus. You should carefully read this prospectus, any accompanying prospectus supplement, any free writing prospectuses we have prepared or authorized as well as the information incorporated in this prospectus or any accompanying prospectus supplement by reference. See "Incorporation by Reference." Any information in any accompanying prospectus supplement, any free writing prospectus or any subsequent material incorporated herein or therein by reference will supersede the information in this prospectus or any earlier prospectus supplement.

This prospectus contains summaries of certain provisions in some of the documents described herein, but reference is hereby made to the actual documents for complete information. All of the summaries are qualified in their entirety by reference to the complete text of the actual documents. Copies of some of the documents referred to herein have been filed or will be filed or incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below in the section entitled "Where You Can Find More Information."

Neither we nor any of the selling stockholders have authorized anyone to provide any information or to make any representations other than those contained in this prospectus, in any accompanying prospectus supplement or in any free writing prospectuses we have prepared or authorized. You should rely only on the information provided in this prospectus or any prospectus supplement, including information incorporated by reference herein or therein, or any free writing prospectus that we have specifically referred you to. Neither we nor any of the selling stockholders take responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the shares offered hereby and only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus, any prospectus supplement or any documents we incorporate herein or therein, or in any free writing prospectus, is current only as of the respective dates thereof. Our business, financial condition, results of operations and prospects may have changed since those respective dates.

No action is being taken in any jurisdiction outside the United States to permit a public offering of common stock or possession or distribution of this prospectus in that jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restriction as to this offering and the distribution of this prospectus applicable to those jurisdictions.

Unless otherwise indicated or the context otherwise requires, all references in this prospectus to "we," "our," "us," "ADES" and the "Company" refer to Advanced Emissions Solutions, Inc. together with its consolidated subsidiaries.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains an internet website at www.sec.gov that contains periodic and current reports, proxy and information statements, and other information regarding registrants, including us, that file electronically with the SEC.

We also make available, free of charge, on or through our Internet website, www.advancedemissionssolutions.com, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, Proxy Statements on Schedule 14A and, if applicable, amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The information on or that can be accessed through our website is not a part of this prospectus and the inclusion of our website address in this prospectus is an inactive textual reference only. In addition, you may request copies of these filings at no cost at: Advanced Emissions Solutions, Inc., 8051 E. Maplewood Ave., Suite 210, Greenwood Village, Colorado 80111, telephone: (720) 598-3500.

We have filed with the SEC a registration statement on Form S-1 under the Securities Act of 1933, as amended (the "Securities Act"), including exhibits, of which this prospectus forms a part, with respect to the shares of common stock that may be offered hereunder. This prospectus does not contain all of the information set forth in the registration statement and exhibits thereto. For further information with respect to our company and the shares of common stock offered hereby, reference is made to the registration statement, including the exhibits thereto. Whenever we make reference in this prospectus to any of our contracts, agreements or other documents, the references are summaries and are not necessarily complete and you should refer to the exhibits attached to or incorporated by reference into the registration statement for copies of the actual contract, agreement or other document. Our SEC filings, including the registration statement of which this prospectus forms a part and the exhibits thereto, are available to you for free on the SEC’s website listed above.

INCORPORATION BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus and any prospectus supplement the information we file with the SEC. This means that we can disclose important information to you by referring you to another document filed separately with the SEC. Any information referenced in this way is considered part of this prospectus. Any subsequent information filed with the SEC will automatically be deemed to update and supersede the information in this prospectus and in our other filings with the SEC.

We incorporate by reference in this prospectus the documents listed below that have been previously filed with the SEC, as well as any filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act from the initial filing of the registration statement of which this prospectus forms a part until the termination or completion of the offering of the securities described in this prospectus; provided, however, we are not incorporating by reference any documents or portions of documents deemed to have been furnished rather than filed in accordance with SEC rules:

- our Annual Report on Form 10-K for the year ended December 31, 2022, as filed with the SEC on March 8, 2023;
- the information specifically incorporated by reference into our Annual Report on Form 10-K from our definitive proxy statement on Schedule 14A, filed with the SEC on April 27, 2023;
- our Quarterly Reports on Form 10-Q for the quarter ended March 31, 2023, as filed with the SEC on May 9, 2023; for the quarter ended June 30, 2023, as filed with the SEC on August 9, 2023; and for the quarter ended September 30, 2023, as filed with the SEC on November 8, 2023;
- our Current Reports on Form 8-K filed with the SEC on February 1, 2023, March 2, 2023, March 29, 2023 (Item 8.01 only), April 14, 2023, June 6, 2023, June 15, 2023, July 17, 2023, August 3, 2023 and September 18, 2023 and November 8, 2023 (filing containing Item 5.02 only);
- the description of our common stock contained or incorporated by reference in our Registration Statement on Form 8-A filed with the SEC on July 6, 2016, as updated by any amendments or reports filed for the purpose of updating such description; and
- the description of our Series B Junior Participating Preferred Stock (currently traded with our common stock (contained or incorporated by reference in our Registration Statement on Form 8-A filed on May 8, 2027, as amended by the Forms 8-A/As filed on April 11, 2018, April 11, 2019, April 9, 2020, April 13, 2021, March 16, 2022 and April 14, 2023, as updated by any amendments or reports filed for the purpose of updating such description.

Notwithstanding the foregoing, information furnished under Items 2.02 and 7.01 of any Current Report on Form 8-K, including the related exhibits under Item 9.01, is not incorporated by reference in this prospectus or any prospectus supplement.

To obtain copies of these filings, see "*Where You Can Find More Information"* above.

ABOUT THE COMPANY

ADA-ES, Inc. ("ADA"), a Colorado corporation, was incorporated in 1997. Pursuant to an Agreement and Plan of Merger, effective July 1, 2013, Advanced Emissions Solutions, Inc. ("ADES"), a Delaware company incorporated in 2011, succeeded ADA as the publicly-held corporation and ADA became a wholly-owned subsidiary of ADES. In 2018, we acquired ADA Carbon Solutions, LLC as a means to enter into the broader Activated Carbon ("AC") market and to expand our product offerings in the mercury control industry and other applicable AC markets. In February 2023, we acquired the direct subsidiaries of Arq Ltd (hereafter the Arq Limited subsidiaries referred to as "Arq") to secure access to a unique feedstock, a manufacturing facility and certain patented processes as a means to further expand our product offerings to new markets. Our Annual Report on Form 10-K is referred to as the "Form 10-K" or the "Report." As used in this prospectus, the terms the "Company," "we," "us" and "our" means ADES and its consolidated subsidiaries.

We are an environmental technology company and sell consumable products that utilize AC and chemical-based technologies to a broad range of customers, including coal-fired utilities, industrials, water treatment plants and other diverse markets served by one our major customers. Our primary products are comprised of AC, which is produced from a variety of carbonaceous raw materials. Our AC products include both powdered activated carbon, Colloidal Activated Carbon Product and granular activated carbon.Our proprietary technologies and associated product offerings provide purification solutions to enable our customers to reduce certain contaminants and pollutants to meet the challenges of existing and potential future regulations. Additionally, we own an associated lignite mine that supplies the primary raw material for the manufacturing of our current products.

As of December 31, 2022 and 2021, we held equity interests of 42.5% and 50.0% in Tinuum Group, LLC ("Tinuum Group") and Tinuum Services, LLC ("Tinuum Services"), respectively, which are both unconsolidated entities, and through December 31, 2021, both contributed significantly to our financial position and results of operations. We account for Tinuum Group and Tinuum Services under the equity method of accounting. As a result of the expiration of Internal Revenue Code ("IRC") Section 45 - Production Tax Credit ("Section 45") refined coal tax credit program effective December 31, 2021, both Tinuum Group and Tinuum Services ceased operations in 2023 and continue to wind down their operations.

Our Corporate Information

We were incorporated as a Delaware corporation in 2011. Our current corporate headquarters address is 8051 E. Maplewood Ave., Suite 210, Greenwood Village, Colorado 80111. For further information please view our official company website at www.advancedemissionssolutions.com. Information included or referred to on, or otherwise accessible through, our website is not deemed to form a part of, or be incorporated by reference into, this prospectus or the registration statement of which this prospectus forms a part, and you should not rely on that information when making a decision to invest in our common stock.

Implications of Being a Smaller Reporting Company

We are currently a "smaller reporting company" as defined in Rule 12b-2 under the Exchange Act. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures until the fiscal year following the determination that the aggregate market price of our voting and non-voting common stock held by non-affiliates is more than $250 million measured on the last business day of our second fiscal quarter, or our annual revenue is more than $100 million during the most recently completed fiscal year and the aggregate market price of our voting and non-voting common stock held by non-affiliates is more than $700 million measured on the last business day of our second fiscal quarter. Accordingly, the information contained herein may be different than the information you receive from other public companies in which you hold stock.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should consider the risks, uncertainties and other factors described in "Risk Factors" and elsewhere in our most recent Annual Report on Form 10-K, as supplemented and updated by subsequent Quarterly Reports on Form 10-Q, that we have filed or will file with the SEC, and in other documents which are incorporated by reference in this prospectus, as well as the risk factors and other information contained in or incorporated by reference in any accompanying prospectus supplement, together with all of the other information included in this prospectus. If any of these or any unanticipated risks actually occur, our business, financial condition and results of operations could be materially and adversely affected and the trading price of our common stock could decline, causing you to lose some or all of your investment in our common stock.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains "forward-looking statements" within the meaning of Section 27A of the Securities Act, and Section 21E of the Exchange Act. Forward-looking statements generally relate to future events or our future financial or operating performance. Words or phrases such as "anticipates," "believes," "expects," "estimates," "predicts," the negative expressions of such words, or similar expressions are used in this prospectus to identify forward-looking statements, and such forward-looking statements include, but are not limited to, statements or expectations regarding:

- the anticipated effects from an increase in pricing of our activated carbon ("AC") products;
- the anticipated effects from an increase in costs of our AC products and related cost increases in supply and logistics;
- expected supply and demand for our AC products and services;
- increasing competition in the AC market;
- the effects of the transaction (the "Arq Acquisition") with Arq Limited ("Arq Ltd"), pursuant to which we acquired all of the direct and indirect equity interests of Arq's subsidiaries ("Arq");
- the ability to successfully integrate Arq's business;
- the ability to develop and utilize Arq's products and technology;
- the ability to make Arq's products commercially viable;
- the expected future demand of Arq's products;
- future level of research and development activities;
- future plant capacity expansions and site development projects;
- the effectiveness of our technologies and the benefits they provide;
- probability of any loss occurring with respect to certain guarantees made by Tinuum Group;
- the timing of awards of, and work and related testing under, our contracts and agreements and their value;
- the timing and amounts of, or changes in, future revenues, backlog, funding for our business and projects, margins, expenses, earnings, tax rates, cash flows, royalty payment obligations, working capital, liquidity and other financial and accounting measures;
- the amount and timing of future capital expenditures needed for our business and needed by Arq to fund our business plan;
- awards of patents designed to protect our proprietary technologies both in the U.S. and other countries;
- the adoption and scope of regulations to control certain chemicals in drinking water and other environmental concerns;
- the impact of adverse global macroeconomic conditions, including rising interest rates, recession fears and inflationary pressures, and geopolitical events or conflicts;
- opportunities to effectively provide solutions to U.S. coal-related businesses to comply with regulations, improve efficiency, lower costs and maintain reliability.
- the impact of prices of competing power generation sources such as natural gas and renewable energy on demand for our products; and
- bank failures or other events affecting financial institutions.

The forward-looking statements included in this prospectus involve risks and uncertainties. Actual events or results could differ materially from those discussed in the forward-looking statements as a result of various factors including, but not limited to, timing of new and pending regulations and any legal challenges to or extensions of compliance dates of them; the U.S. government's failure to promulgate regulations that benefit our business; changes in laws and regulations, accounting rules, prices, economic conditions and market demand; impact of competition; availability, cost of and demand for alternative energy sources and other technologies; technical, start up and operational difficulties; our inability to commercialize our advanced purification technologies ("APT") on favorable terms; our inability to ramp up our operations to effectively address recent and expected growth in our business; loss of key personnel; availability of materials and equipment for our business; intellectual property infringement claims from third parties; pending litigation; as well as other factors relating to our business strategy, goals and expectations concerning the Arq Acquisition (including future operations, future performance or results); our ability to maintain relationships with customers, suppliers and other with whom we do business, or our results of operations and business generally; risks related to diverting management's attention from our ongoing business operations; the ability to meet Nasdaq's listing standards; costs related to the Arq Acquisition; opportunities for additional sales of our lignite AC products and end-market diversification; our ability to meet customer supply requirements; the rate of coal-fired power generation in the U.S., the timing and cost of capital expenditures and the resultant impact to our liquidity and cash flows as described in our filings with the SEC, with particular emphasis on the risk factor disclosures contained in those filings. You are cautioned not to place undue reliance on the forward-looking statements made in this prospectus and to consult filings we have made and will make with the SEC for additional discussion concerning risks and uncertainties that may apply to our business and the ownership of our securities. The forward-looking statements contained in this prospectus are presented as of the date hereof, and we disclaim any duty to update such statements unless required by law to do so.

USE OF PROCEEDS

All shares of our common stock sold pursuant to this prospectus will be offered and sold by the selling stockholders.The selling stockholders will receive all proceeds from the sale of the shares of common stock offered by this prospectus and any accompanying prospectus supplement. We will not receive any of the proceeds from the sale of our common stock by the selling stockholders.

UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL STATEMENTS

Acquisition

On February 1, 2023 (the "Acquisition Date"), Advanced Emissions Solutions, Inc. ("ADES" or the "Company") entered into a Securities Purchase Agreement (the "Purchase Agreement") with Arq Limited, a company incorporated under the laws of Jersey ("Arq Ltd."), pursuant to which ADES acquired all of the direct and indirect equity interests of Arq Ltd's subsidiaries (the "Acquisition," and hereafter the Arq Ltd. subsidiaries referred to as "Arq") in exchange for consideration (the "Purchase Consideration") totaling $31.2 million and consisting of (i) 3,814,864 shares of common stock, par value $0.001 per share, of ADES (the "Common Stock") and (ii) 5,294,462 shares of Series A Convertible Preferred Stock, par value $0.001 per share, of ADES (the "Preferred Shares"). In connection with the issuance of the Preferred Shares pursuant to the Purchase Agreement, ADES filed the Certificate of Designations of Preferred Stock for the Series A Preferred Stock (the "Certificate of Designations") with the Secretary of State of the State of Delaware.

Series A Preferred Stock

Each outstanding share of Series A Preferred Stock was automatically converted into the number of shares of Common Stock described below upon approval by the stockholders of the Company. On June 13, 2023, ADES' stockholders approved the issuance of shares of Common Stock in exchange for the conversion of all of the outstanding shares of Series A Preferred Stock.

Each Preferred Share was deemed to have an original issue price of $4.00 per share (the "Original Issue Amount"). The number of shares of Common Stock issued upon conversion of each Preferred Share was equal to the product of (i) the sum of (A) the Original Issue Amount *plus* (B) an amount equal to the cumulative amount of the accrued and unpaid dividends (the "Series A Dividend") on such share at such time (regardless of whether or not declared or funds for their payment are lawfully available) *divided by* (ii) the Original Issue Amount, subject to adjustment as provided in the Certificate of Designations.

On March 31, 2023, the Company declared a dividend of 68,464 Series A Shares (the "Series A Quarterly Dividend Shares") with respect to the accrued dividends on the Series A Preferred Stock for the first quarter of 2023. The Series A Quarterly Dividend was determined by dividing (i) the Series A Quarterly Dividend payable with respect to all Preferred Shares held by a holder thereof by (ii) the aggregate Original Issue Amount of all Preferred Shares held by a holder thereof. Each fractional Series A Quarterly Dividend Share was rounded to the nearest whole Series A Quarterly Dividend Share (with 0.5 of a share being rounded down to 0.0). The Series A Quarterly Dividend Shares were recorded at the estimated fair value of $0.2 million as of March 31, 2023 and were issued on April 21, 2023.

Subscription Agreements

On February 1, 2023, and pursuant to the Arq Acquisition, the Company entered into Subscription Agreements (the "Subscription Agreements") with certain persons (the "Subscribers"), which included existing shareholders of Arq Ltd., pursuant to which the Subscribers subscribed for and purchased shares of Common Stock for an aggregate purchase price of $15.4 million and at a price per share of $4.00 (the "PIPE Price Per Share" and such transaction, the "PIPE Investment").

Loan Agreement

As required under the Purchase Agreement, and on February 1, 2023, ADES, as borrower, certain of its subsidiaries, as guarantors, and CF Global ("CFG"), as administrative agent and lender (the "Lender"), entered into a term loan in the amount of $10.0 million, less original issue discount of $0.2 million, (the "Term Loan") upon execution of a Term Loan and Security Agreement (the "Loan Agreement"). The Term Loan has a term of 48 months and bears interest at a rate equal to either (a) Adjusted Term SOFR (subject to a 1.00% floor and a cap of 2.00%) plus a margin of 9.00% paid in cash and 5.00% paid in kind or (b) Base Rate plus a margin of 8.00% paid in cash and 5.00% paid in kind, which interest on the Term Loan in each case shall be payable (or capitalized, in the case of in kind interest) quarterly in arrears. The Term Loan is secured by substantially all of the assets of ADES and its subsidiaries (including those acquired in the Acquisition, but excluding those pledged as collateral under a term loan assumed by the Company in the Arq Acquisition), subject to customary exceptions. The Company incurred issuance costs of $1.3 million associated with the Loan Agreement.

The Loan Agreement also provided for the issuance of a warrant (the "Warrant") to CFG to purchase 325,457 shares of Common Stock, which represented 1% of the post-transaction fully diluted share capital (as defined in the Loan Agreement), at an exercise price of $0.01 per share. The Warrant has a term of 10 years and contains a cash-less exercise provision.

Unaudited Pro Forma Condensed Combined Financial Information

The following unaudited pro forma condensed combined financial information (the "unaudited pro forma financial statements") is based on the historical annual audited consolidated financial statements for the year ended December 31, 2022 of ADES, the historical audited consolidated financial statements for the year ended December 31, 2022 of Arq Ltd., the historical interim unaudited condensed financial statements of ADES for nine months ended September 30, 2023, and the historical unaudited condensed consolidated financial statements of Arq Ltd. and for the period from January 1 to February 1, 2023, as adjusted to give effect to the

Purchase Agreement, the PIPE Investment and the Term Loan and related Warrant issuance (collectively, the "Transactions") for the aforementioned periods. It should be noted that the Arq Ltd. historical financial statements have been prepared under International Financial Reporting Standards ("IFRS") issued by the International Accounting Standards Board. The effects of the Transactions are reflected in the unaudited condensed balance sheet as of September 30, 2023. Accordingly, an unaudited pro forma condensed combined balance sheet is not presented.

The unaudited pro forma condensed combined statements of operations (the "unaudited pro forma statements of operations") for the year ended December 31, 2022 and the nine months ended September 30, 2023 give effect to the Transactions as if they had occurred on January 1, 2022. In addition, certain operating expenses and finance costs pertaining to Arq Ltd. have been excluded in deriving the unaudited pro forma statements of operations.

The unaudited pro forma financial statements are based on and should be read in conjunction with:

- the accompanying notes to the unaudited pro forma financial statements;
- the historical audited consolidated financial statements of ADES as of and for the year ended December 31, 2022 and 2021, which are included in ADES' Annual Report on Form 10-K for the fiscal year ended December 31, 2022 and the historical unaudited condensed consolidated financial statements of ADES as of and for the nine months ended September 30, 2023, which are included in ADES' Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2023.
- the historical audited consolidated financial statements of Arq Ltd. for the year ended December 31, 2022.

The unaudited pro forma financial statements are presented using the acquisition method of accounting, with ADES identified as the acquirer of Arq. Under the acquisition method of accounting, the purchase price is allocated to the underlying Arq tangible and intangible assets acquired and liabilities assumed based on their respective fair market values with any excess purchase price allocated to goodwill.

The unaudited pro forma combined financial statements are presented for informational purposes only and have been prepared in accordance with Article 11 of Regulation S-X of the SEC, and do not necessarily reflect what the combined company's financial position or results of operations would have been had the Transactions occurred as of the dates indicated herein, nor do they purport to project the future financial position and operating results of the combined companies. The pro forma financial statements also do not reflect the costs of any integration activities or cost savings or synergies expected to be achieved as a result of the Transactions, and, accordingly, do not attempt to predict or suggest future results.

The unaudited pro forma financial statements include "Transaction Accounting Adjustments" that are necessary to account for the Transactions as of the dates specified above. In addition, the unaudited pro forma financial statements include adjustments for the accounting differences between IFRS and accounting principles generally accepted in the United States ("U.S. GAAP") as well as reclassifications of certain financial statement components in Arq Ltd's historical financial statements to conform to ADES' financial statement presentation.

The assumptions underlying all of the adjustments made in the unaudited pro forma financial statements are described in the accompanying notes. Adjustments are based on information available to us during the preparation of the unaudited pro forma financial statements and assumptions that we believe are reasonable and factually supportable. The adjustments, which are described in the accompanying notes, are based on the actual adjustments recorded upon completion of the Transactions.

The unaudited pro forma condensed combined financial statements have been adjusted for the following Transactions:

- The Acquisition, in which ADES acquired 100% of the equity interests of Arq in exchange for 3,814,864 newly issued shares of ADES Common stock and 5,294,462 Preferred Shares, which totaled $31.2 million based on the estimated fair values of the shares of Common Stock and the Preferred Shares as of the Acquisition Date.
- The issuance of 3,842,315 shares of ADES Common Stock pursuant to the PIPE Investment in exchange for $15.4 million of cash at the PIPE Price Per Share of $4.00.
- The Loan Agreement in the principal amount of $10.0 million for net cash proceeds of approximately $8.5 million, net of original issue discount and debt issuance costs, and the related issuance of the Warrant to purchase 325,457 shares of Common Stock.

ADVANCED EMISSIONS SOLUTIONS, INC.
UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENT OF OPERATIONS
FOR THE YEAR ENDED DECEMBER 31, 2022

(in thousands)	ADES Historical	Arq Ltd. Historical Reclassified (Note 2)	IFRS to US GAAP Adjustments (Note 3)	Ref	Arq Ltd. Historical Reclassified US GAAP	Transaction Accounting Adjustments (Note 4)	Ref	ADES Pro Forma Combined
Revenues:								
Consumables	$ 102,987	$ —	$ —		$ —	$ —		$ 102,987
Total revenues	102,987	—	—		—	—		102,987
Operating expenses:								
Consumables cost of revenues, exclusive of depreciation and amortization	80,465	—	—		—	—		80,465
Selling, general and administrative	28,140	18,744	5,039	(b), (e)	23,783	(6,421)	(g),(k)	45,502
Depreciation, amortization, depletion and accretion	6,416	3,911	(850)	(b), (c)	3,061	631	(h),(i), (j)	10,108
Other operating expenses	34	—	—		—	—		34
Impairment of long-lived assets	—	44,560	(45)	(d)	44,515	—		44,515
Total operating expenses	115,055	67,215	4,144		71,359	(5,790)		180,624
Operating (loss) income	(12,068)	(67,215)	(4,144)		(71,359)	5,790		(77,637)
Other income (expense):								
Earnings from equity method investments	3,541	—	—		—	—		3,541
Interest expense	(336)	(20,136)	18,178	(a), (b), (c)	(1,958)	(499)	(g),(l)	(2,793)
Other	155	11,478	(5,329)	(a), (b), (f)	6,149	(699)	(g)	5,605
Total other income (loss)	3,360	(8,658)	12,849		4,191	(1,198)		6,353
(Loss) income before income tax expense (benefit)	(8,708)	(75,873)	8,705		(67,168)	4,592		(71,284)
Income tax expense (benefit)	209	(442)	442	(f)	—	—	(m)	209
Net (loss) income	$ (8,917)	$ (75,431)	$ 8,263		$ (67,168)	$ 4,592		$ (71,493)

ADVANCED EMISSIONS SOLUTIONS, INC.
UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENT OF OPERATIONS
FOR THE NINE MONTHS ENDED SEPTEMBER 30, 2023

(in thousands)	ADES Historical for the nine months ended September 30, 2023	Arq Ltd. Historical Reclassified for the period from January 1 to February 1, 2023 (Note 2)	IFRS to US GAAP Adjustments (Note 3)	Ref	Arq Ltd. Historical Reclassified US GAAP for the period from January 1 to February 1, 2023	Transaction Accounting Adjustments (Note 4)	Ref	ADES Pro Forma Combined
Revenues:								
Consumables	$ 71,079	$ —	$ —		$ —	$ —		$ 71,079
Total revenues	71,079	—	—		—	—		71,079
Operating expenses:								
Consumables cost of revenue, exclusive of depreciation and amortization	53,218	—	—		—	—		53,218
Selling, general and administrative	29,719	4,624	417	(b),(e)	5,041	(551)	(g),(k)	34,209
Depreciation, amortization, depletion and accretion	7,276	77	(73)	(b),(c)	4	236	(h),(i),(j)	7,516
Other operating expense	(2,695)	—	—		—	—		(2,695)
Total operating expenses	87,518	4,701	344		5,045	(315)		92,248
Operating loss	(16,439)	(4,701)	(344)		(5,045)	315		(21,169)
Other income (expense):								
Earnings from equity method investments	1,512	—	—		—	—		1,512
Interest expense	(2,155)	(2,085)	2,019	(a),(b),(c)	(66)	(149)	(g),(l)	(2,370)
Other	1,510	(12)	27	(f)	15	—		1,525
Total other income (loss)	867	(2,097)	2,046		(51)	(149)		667
(Loss) income before income tax benefit	(15,572)	(6,798)	1,702		(5,096)	166		(20,502)
Income tax benefit	(33)	(27)	27	(f)	—	—	(m)	(33)
Net (loss) income	$ (15,539)	$ (6,771)	$ 1,675		$ (5,096)	$ 166		$ (20,469)

NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION

1. Basis of Presentation

The accompanying unaudited pro forma financial statements are prepared from the historical consolidated financial statements of ADES and Arq Ltd. after giving effect to the Transactions and assumptions, reclassifications and adjustments as described in the accompanying notes. The unaudited combined pro forma statements of operations give effect to the Transactions as if they had occurred on January 1, 2022.

The historical annual audited consolidated financial statements and interim unaudited condensed consolidated financial statements of ADES are prepared in accordance with U.S. GAAP and the historical annual audited consolidated financial statements and interim unaudited condensed consolidated financial statements of Arq Ltd. are prepared in accordance with IFRS.

The unaudited pro forma financial statements do not necessarily reflect what the combined company's financial condition or results of operations would have been had the Transactions occurred on the dates indicated and also may not be useful in predicting the future financial condition and results of operations of the combined company. The actual financial position and results of operations may differ significantly from the pro forma amounts reflected herein due to a variety of factors.

ADES has accounted for the Transactions under the acquisition method, which requires recognizing and measuring the identifiable assets acquired and the liabilities assumed at fair value. Accordingly, ADES has used its best estimates and assumptions to assign fair value to the tangible assets acquired, identifiable intangible asset(s) and liabilities assumed as of the Acquisition Date. The value of the Purchase Consideration is based on the estimated fair value of Preferred Shares, as determined by a third party valuation firm, and the closing price per share of Common Stock. All values were determined as of the Acquisition Date.

The fair values assigned to Arq's tangible and identifiable intangible assets acquired and liabilities assumed, as described in Note 4, are based on management's estimates and assumptions. ADES has estimated the fair value of Arq's assets acquired and liabilities assumed based on discussions with Arq's management, preliminary valuation studies, due diligence and information presented in Arq Ltd.'s historical audited and unaudited financial statements. The estimated fair values of these assets acquired and liabilities assumed are considered preliminary and represent management's best estimates of fair value and may be revised as additional information is received. Thus, the provisional measurements of fair value are subject to change.
The Transaction Accounting adjustments have been made solely for the purpose of providing the unaudited pro forma financial information presented herein.

Included in the historical statements of operations of ADES and Arq Ltd. for the nine months ended September 30, 2023 and for the year ended December 31, 2022 are Acquisition-related transaction costs of $5.9 million and $6.6 million, respectively, which are not expected to recur in ADES' statement of operations beyond 12 months after the Acquisition Date.

2. Arq Ltd. Historical Financial Statements

Arq Ltd.'s historical balances were derived from Arq Ltd.'s historical consolidated financial statements for the year ended December 31, 2022 and for the period from January 1 to February 1, 2023, as described above, and are presented under IFRS. The unaudited pro forma financial statements reflect certain reclassifications of Arq Ltd.'s historical financial statement captions to conform to ADES' presentation in its historical financial statements.

The reclassifications are summarized below (in thousands):

Arq Ltd. Financial Statement Line	Arq Ltd. for the year ended December 31, 2022	Reclassifications	Arq Ltd. Historical Reclassified Amount	ADES Financial Statement Line
Plant operating expenses	$ 51,316	$ (51,316) (1)	$ —	
	—	44,560	44,560	Impairment of long-lived assets
	—	3,911	3,911	Depreciation, amortization, depletion and accretion
Research and development expense	1,815	(1,815) (2)	—	
Administration expenses	14,084	(14,084) (3)	—	
	—	18,744	18,744	Selling, general and administrative
Operating loss	(67,215)	—	(67,215)	
Finance expense	(20,136)	—	(20,136)	Interest expense
Gain on changes to liabilities and debt	11,267	(11,267)	—	
Other income	299	(299)	—	
Other expense	(88)	11,566	11,478	Other
Loss before tax	(75,873)	—	(75,873)	
Income tax income	442	—	442	Income tax expense (benefit)
Net loss for the financial year	(75,431)	—	(75,431)	Net income (loss)
Other comprehensive income	—	—	—	
Total comprehensive loss for the financial year	(75,431)	—	(75,431)	
Attributable to Equity shareholders of the company	$ (75,431)	$ —	$ (75,431)	

(1) Represents amounts which were reclassified to conform with ADES' presentation as follows: approximately $44.6 million to Impairment of long-lived assets, $3.1 million to Selling, general and administrative and $3.6 million to Depreciation, amortization, depletion and accretion.

(2) $1.8 million was reclassified to Selling, general and administrative to conform with ADES' presentation.

(3) Represents amounts which were reclassified to conform with ADES' presentation as follows: $13.8 million to Selling, general and administrative and $0.3 million to Depreciation, amortization, depletion and accretion.

Arq Ltd. Financial Statement Line	Arq Ltd. for the period from January 1 to February 1, 2023	Reclassifications	Arq Ltd. Historical Reclassified Amount	ADES Financial Statement Line
Plant operating expenses	$ 291	$ (291) (1)	$ —	
		77	77	Depreciation, amortization, depreciation, and accretion
Research and development expenses	83	(83) (2)	—	
Administration expenses	4,327	(4,327) (3)	—	
		4,624	4,624	Selling, general and administrative
Operating loss	(4,701)	—	(4,701)	
Finance expense	(2,085)	—	(2,085)	Interest expense
Other income	80	(92)	(12)	Other
Other expenses	(92)	92	—	
Loss before tax	(6,798)	—	(6,798)	
Income tax income	27	—	27	Income tax expense (benefit)
Net loss and total comprehensive loss attributable to the shareholders of the company	(6,771)	—	(6,771)	Net loss
Attributable to Equity shareholders of the company	$ (6,771)	$ —	$ (6,771)	

(1) Represents amounts which were reclassified to conform with ADES’ presentation as follows: approximately $0.2 million to Selling, general and administrative and $0.1 million to Depreciation, amortization, depletion and accretion.

(2) $0.1 million was reclassified to Selling, general and administrative to conform with ADES’ presentation.

(3) Represents amounts which were reclassified to conform with ADES' presentation as follows: approximately $4.3 million to Selling, general and administrative and $8.0 thousand to Depreciation, amortization, depletion and accretion.

3. IFRS to U.S. GAAP adjustments

IFRS differs in certain material respects from U.S. GAAP. The following material adjustments have been made to reflect Arq Ltd.'s historical statements of operations on a U.S. GAAP basis for purposes of presenting unaudited pro forma financial information. In addition, the adjustments have been made to align Arq Ltd.'s historical significant accounting policies under IFRS to ADES' significant accounting policies under U.S. GAAP.

(a) Preferred Units

Under IFRS, Arq Ltd. classified and accounted for certain preferred shares (the "Preferred Units") as liabilities and classified and recorded dividends earned on the Preferred Units as finance costs.

Under U.S. GAAP, the Preferred Units are not classified as liabilities, as they are not mandatorily redeemable as defined in U.S. GAAP. Further, under U.S. GAAP, dividends earned on the Preferred Units represent a "preferred return" and are recorded within equity. In addition, SEC accounting guidance "requires equity instruments with redemption features that are not solely within the control of the issuer to be classified outside of permanent equity (often referred to as classification in "temporary equity"). Accordingly, under U.S. GAAP and SEC accounting guidance, the Preferred Units, including cumulative dividends, are classified as temporary equity. Since the cumulative dividends earned on the Preferred Units do not represent finance costs under U.S. GAAP, they are not expensed in the statement of operations under U.S. GAAP.

For the year ended December 31, 2022 and for the period from January 1 to February 1, 2023, Arq Ltd. reported finance costs of $17.4 million and $2.0 million related to the Preferred Units, which are eliminated and recorded to temporary equity under U.S. GAAP. In addition, for the year ended December 31, 2022, Arq Ltd. recognized a gain of $5.8 million and corresponding reduction to the carrying amount of the Preferred Units related to a modification of conversion terms related to the Preferred Units (the "Preferred Gain"). Under U.S. GAAP, the impact of this modification is not recorded to the statement of operations but recorded within equity.

The following table reflects the decrease in interest expense and the reversal of the Preferred Gain due to the recording of cumulative dividends on the Preferred Units within equity under U.S. GAAP:

(in thousands)	For the year ended December 31, 2022	For the period from January 1 to February 1, 2023
Condensed Statement of Operations		
Decrease to Interest expense	$ (17,440)	$ (1,970)
Decrease to Other income	$ (5,775)	$ —

(b) Leases

Under IFRS, all leases are classified and accounted for as finance leases. Under U.S. GAAP, leases are classified as either finance or operating leases based on satisfying certain criteria, and under U.S. GAAP, certain Arq Ltd. leases meet the definition of operating leases. Arq Ltd. reports right of use ("ROU") assets for all of its leases in Property, plant and equipment. Under U.S. GAAP, ROU assets under operating leases are reported as Other long-term assets. The net carrying amount of ROU assets under operating leases under U.S. GAAP is different from their net carrying amounts as Property, plant and equipment under IFRS, primarily due to differences between depreciation of Property, plant and equipment recognized under IFRS and amortization recognized on ROU assets under operating leases under U.S. GAAP.

In addition, under U.S. GAAP, interest on an operating lease liability and amortization of an operating lease ROU asset are reported a single expense in operating expenses, in contrast to lease cost for finance leases, which are reported separately as interest expense and amortization of ROU assets. In converting the leases that meet the definition of operating leases, amounts for both interest expense and amortization of ROU assets reported under IFRS are reversed, and the aggregate amount of operating lease expense is reported under U.S. GAAP.

The following table reflects the adjustments to report lease costs of certain of Arq Ltd.'s leases as operating leases under U.S. GAAP:

(in thousands)	For the year ended December 31, 2022	For the period from January 1 to February 1, 2023
Condensed Statement of Operations		
Increase to Selling, general and administrative	$ 1,430	$ 105
Decrease to Depreciation, amortization, depletion and accretion	$ (1,074)	$ (73)
Decrease to Interest expense	$ (600)	$ (49)
Increase to Other income	$ 4	$ —

(c) Asset retirement obligations

Under IFRS, the calculation of an asset retirement obligation ("ARO") is based on a risk-free rate, and under U.S. GAAP, it is determined using a credit adjusted rate. Arq Ltd. calculated its ARO using a discount rate that was significantly lower than a credit adjusted rate required under U.S. GAAP. The higher discount rate under U.S. GAAP resulted in significantly lower ARO and ARO asset amounts at inception reported under U.S. GAAP compared to IFRS. In addition, under IFRS, the accretion of an ARO is reported as interest expense and under U.S. GAAP is reported as accretion expense. The reduction of ARO and ARO asset amounts also impacted the reported amounts of accretion expense and depreciation, respectively, for the periods presented below.

(in thousands)	**For the year ended December 31, 2022**	**For the period from January 1 to February 1, 2023**
Condensed Statement of Operations		
Increase to Depreciation, amortization, depletion and accretion	$ 224	$ —
Decrease to Interest expense	$ (138)	$ —

(d) Impairment

The following table reflects the adjustments to recognize changes in impairment under U.S. GAAP related to the IFRS to U.S. GAAP differences in reported asset and liability amounts for ROU assets under operating leases and AROs and ARO assets, as discussed in Notes 3(b) Leases and 3(c) Asset retirement obligations above:

(in thousands)	**For the year ended December 31, 2022**	**For the period from January 1 to February 1, 2023**
Condensed Statement of Operations		
Decrease to impairment of long-lived assets	$ (45)	$ —

(e) Stock-based compensation

Under IFRS, stock-based compensation for graded vesting stock awards containing only service conditions is recognized and measured only as, in substance, multiple awards. Under U.S. GAAP, an accounting election is made to treat graded vesting awards as either a single award (straight-line cost recognition), or, in substance, multiple awards for both recognition and measurement. ADES' policy is to account for all service-based stock awards as a single award and to recognize stock-based compensation expense on a straight-line method over the vesting period. Arq Ltd.'s historical stock awards are graded vesting awards that vest based on service conditions. ADES is adjusting Arq Ltd's historical stock-based compensation expense, which is based on an accelerated graded vesting method, to ADES' straight-line method. The calculation of the fair value of Arq Ltd.'s historical stock awards is the same under both IFRS and U.S. GAAP.

The following table reflects the adjustment of stock-based compensation expense from Arq Ltd.'s accelerated graded vesting method to ADES' straight-line method:

(in thousands)	**For the year ended December 31, 2022**	**For the period from January 1 to February 1, 2023**
Condensed Statement of Operations		
Increase to Selling, general and administrative	$ 3,609	$ 312

(f) Income taxes

Arq Ltd. has earned refundable tax credits in the United Kingdom based on qualified research and development expenses incurred. Under IFRS, the tax credits generated are a component of Income tax expense (benefit). Under U.S. GAAP, these tax credits are not presented as a a component of income tax expense (benefit) but as a component of Other income. The following table reflects the adjustment to present refundable tax credits as refundable research and development tax credits earned by Arq as a component of Other income rather than as a component of Income tax expense benefit.

(in thousands)	**For the year ended December 31, 2022**	**For the period from January 1 to February 1, 2023**
Condensed Statement of Operations		
Increase to Other	$ 442	$ 27
Decrease to Income tax expense (benefit)	$ 442	$ 27

4. Transaction Accounting Adjustments to the Unaudited Pro Forma Combined Financial Statements

The following transaction accounting adjustments have been made to reflect the Transactions. Further review may identify additional adjustments that could have a material impact on the unaudited pro forma financial statements of the combined company. At this time, ADES is not aware of any additional transaction accounting adjustments that would have a material impact on the unaudited pro forma financial statements that are not reflected or disclosed in the pro forma adjustments.

ADES performed a valuation analysis of the fair value of Arq's assets and liabilities based on the purchase consideration of $31.2 million. The table below summarizes the allocation of the purchase price to the assets acquired and liabilities assumed for purposes of the unaudited pro forma financial information as of the Acquisition Date:

(in thousands)		Preliminary Purchase Price Allocation
Fair value of assets acquired:		
Cash	$	1,411
Prepaid expenses and other current assets		2,229
Restricted cash, long-term		814
Property, plant and equipment, net		39,159
Other long-term assets, net		11,717
Amount attributable to assets acquired	$	55,330
Fair Value of liabilities assumed:		
Accounts payable and accrued expenses	$	9,806
Current portion of long-term debt		494
Other current liabilities		103
Long-term debt, net of current portion		9,199
Other long-term liabilities		4,523
Amount attributable to liabilities assumed	$	24,125
Net assets acquired	$	31,205

The purchase price allocation, which the Company used in recording the Arq Acquisition in its financial statements on February 1, 2023, has been used to prepare transaction accounting adjustments in the pro forma statements of operations.

As part of its preliminary valuation of Arq, the Company identified an intangible asset, developed technology. The estimated fair value of the developed technology was determined using significant estimates and assumptions. As such, actual amounts may differ from these estimates. The estimated fair value and useful live of the developed technology are as follows:

(in thousands)		Estimated Fair Value	Estimated Useful Life in Years
Developed technology	$	7,700	20

Transaction Accounting Adjustments to Unaudited Pro Forma Condensed Combined Statement of Operations

The following transaction accounting adjustments have been made to reflect the Transactions in the unaudited pro forma combined statements of operations for the year ended December 31, 2022 and nine months ended September 30, 2023 assuming the Transactions had occurred as of January 1, 2022:

(g) Represents elimination of certain expenses solely attributable to Arq Ltd. (in thousands):

		Year ended December 31, 2022		Nine months ended September 30, 2023
Decrease in Stock-based compensation	$	(5,906)	$	(480)
Elimination of Interest expense on convertible notes payable		1,492		—
Elimination of gain on conversion of convertible notes payable		(699)		—

(h) Represents an adjustment to historical depreciation of the property, plant and equipment acquired by the company based on its estimated fair value as of the Acquisition Date. The estimated average useful life of the acquired property, plant and equipment was 20 years. The following table summarizes the change in the estimated depreciation (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated depreciation	$ 2,976	$ 198
Historical depreciation	(2,787)	(5)
Transaction accounting adjustment to depreciation	$ 189	$ 193

(i) Represents the amortization of Arq's developed technology acquired by the Company based on its estimated fair value as of the Acquisition Date. The following table summarizes the change in the estimated amortization (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated amortization	$ 385	$ 32
Historical amortization	—	—
Transaction accounting adjustment to amortization	$ 385	$ 32

(j) Represents the increase in accretion on asset retirement obligations assumed by the Company based on their estimated fair values as of the Acquisition Date. The following table summarizes the change in the estimated accretion (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated accretion	$ 235	$ 23
Historical accretion	(178)	(12)
Transaction accounting adjustment to accretion	$ 57	$ 11

(k) Represents the decrease in operating lease expense on operating leases assumed by the Company based on their estimated fair values as of the Acquisition Date. The following table summarizes the change in operating lease expense (in thousands)

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated operating lease expense	$ 616	$ 51
Historical operating lease expense	(1,131)	(122)
Transaction accounting adjustment to operating lease expense	$ (515)	$ (71)

(l) Represents the increase to interest expense resulting from the stated interest on the Term Loan and the amortization of related debt discount and debt issuance costs as follows (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Interest expense on Term Loan (1)	$ (1,458)	$ (99)
Amortization of Term Loan discount and debt issuance costs (2)	(533)	(50)
Transaction accounting adjustment to interest expense	$ (1,991)	$ (149)

(1) The Term Loan bears interest at a per annum rate equal to: (i) Term SOFR plus a margin of 9.0% paid in cash quarterly and (ii) 5.0% paid-in-kind ("PIK"), with PIK interest added to the principal balance of the Term Loan on a quarterly basis. Term SOFR is capped at a rate of 2.0% per annum and floored at a rate of 1.0% per annum. The stated interest rate assumed for purposes of preparing this unaudited pro forma consolidated financial information is 16.0% per annum (Term SOFR of 2.0% plus margin of 9.0% plus PIK interest of 5.0%). A 100 basis point decrease in the Term SOFR would result in a decrease in interest expense of approximately $0.1 million for the year ended December 31, 2022 and approximately $4.0 thousand for the nine months ended September 30, 2023.

(2) The Term Loan was recorded at the principal amount of $10.0 million, less original issue discount and debt issuance costs of $0.2 million and $1.3 million, respectively, and debt discount associated with the allocation of cash proceeds to the Warrant of $0.9 million. The Company estimated the standalone fair values of the Term Loan and the Warrant and allocated the proceeds to each instrument based on its relative fair value. The amount allocated to the Warrant is recorded as a debt discount and is amortized to interest expense over the term of the Term Loan. The standalone fair value of the Term Loan was based on a comparison of borrowings, credit ratings, etc. As the Warrant is exercisable for $0.01 per share, the fair value was deemed to be equal to the fair value of the underlying shares, and accordingly, the fair value of the Warrant was determined as the number of shares issuable from the exercise of the Warrant (based on 1.0% of post-transaction fully diluted share capital) multiplied by the closing price of ADES' common stock on the Acquisition Date;

(m) For the year ended December 31, 2022, both ADES and Arq incurred pretax losses, and pro forma combined income tax expense is comprised of out of period tax items incurred by ADES. As of December 31, 2022, both ADES and Arq do not forecast the ability to utilize the pretax losses, and accordingly, the transaction accounting adjustments have been tax-effected at a zero percent tax rate.

For the nine months ended September 30, 2023, both ADES and Arq incurred pretax losses, and pro forma combined income tax benefit is comprised of of out period tax items incurred by ADES. As of September 30, 2023, both ADES and Arq do not forecast the ability to utilize the losses, and accordingly, the transaction accounting adjustments for this period have been tax-effected at a zero percent tax rate.

Pro forma earnings (loss) per share

Pro forma income (loss) per share amounts for the Unaudited Pro Forma Combined Statements of Operations have been recalculated after giving effect to the Transactions, on a basic and diluted outstanding share basis, assuming that the Preferred Shares and shares of Common Stock issued in connection with the Transactions were outstanding at the beginning of the periods presented. The effect of anti-dilutive potential ordinary shares is ignored in calculating pro forma diluted income (loss) per share.

	For the year ended December 31, 2022	
(in thousands, except for per share data)	**Historical ADES**	**ADES Pro Forma Combined**
Net loss	$ (8,917)	$ (71,493)
Preferred Shares dividends (1)	—	(1,510)
Loss attributable to common shareholders - basic	$ (8,917)	$ (73,003)
Weighted average number of common shares outstanding - basic (2)	18,453	26,436
Loss per share - basic	**$ (0.48)**	**$ (2.76)**
Net loss	$ (8,917)	$ (71,493)
Preferred Shares dividends (1)	—	(1,510)
Loss attributable to common shareholders - diluted	$ (8,917)	$ (73,003)
Weighted average number of common shares outstanding - diluted	18,453	26,436
Loss per share - diluted	**$ (0.48)**	**$ (2.76)**

	For the nine months ended September 30, 2023	
(in thousands, except for per share data)	**Historical ADES**	**ADES Pro Forma Combined**
Net loss	$ (15,539)	$ (20,469)
Preferred Shares dividends (1)	(157)	(157)
Loss attributable to common shareholders - basic	$ (15,696)	$ (20,626)
Weighted average number of common shares outstanding - basic (2)	27,894	28,781
Loss per share - basic	**$ (0.56)**	**$ (0.72)**
Loss attributable to common shareholders - diluted	$ (15,696)	$ (20,626)
Weighted average number of common shares outstanding - diluted	27,894	28,781
Loss per share - diluted	**$ (0.56)**	**$ (0.72)**

(1) Preferred Shares dividends are calculated based on an 8% annual rate, compounded quarterly, of the Original Issue Amount and assume payment in kind (payable in Preferred Shares).

(2) The weighted-average number of common shares outstanding for basic and diluted net income (loss) per share for the year ended December 31, 2022 and nine months ended September 30, 2023 includes 325,457 shares issuable upon the exercise of the Warrant at $0.01 per share.

SELLING STOCKHOLDERS

This prospectus covers an aggregate of up to 10,709,755 shares of our common stock that may be sold or otherwise disposed of by the selling stockholders, which number consists of (i) 10,345,027 shares of our common stock currently held by the selling stockholders and (ii) 325,457 shares of our common stock issuable upon exercise of the Warrant held by a selling stockholder. The shares offered by this prospectus may be offered from time to time by the selling stockholders. The selling stockholders may sell some, all or none of their shares. We do not know how long the selling stockholders will hold the shares offered hereunder before selling them. The selling stockholders may have sold or transferred, in transactions exempt from the registration requirements of the Securities Act, some or all of their respective shares since the date on which the information in the table below is presented. Information about the selling stockholders may change over time. As used in this prospectus, the term "selling stockholders" includes the selling stockholders listed below, and any donee, pledgee, transferee or other successor in interest selling shares received after the date of this prospectus from a selling stockholder as a gift, pledge, or other non-sale related transfer.

The following table sets forth the name of each selling stockholder, the number of shares of our common stock and the percentage of our common stock beneficially owned by each selling stockholder prior to this offering, the number of shares that may be offered under this prospectus by each selling stockholder, and the number of shares of our common stock and the percentage of our common stock to be beneficially owned by each selling stockholder after completion of this offering, assuming that all shares offered hereunder are sold as contemplated herein. The number of shares in the column "Maximum Number of Shares That May Be Offered" represents all of the shares that the selling stockholder may offer under this prospectus.

There were 33,180,907 shares of common stock outstanding as of December 29, 2023.

Beneficial ownership is determined under the rules of the SEC and generally includes voting or investment power over securities. Except in cases where community property laws apply or as indicated in the footnotes to this table, we believe that each stockholder identified in the table possesses sole voting and investment power over all shares of common stock shown as beneficially owned by the stockholder. Shares of common stock subject to options and warrants that are exercisable or exercisable within 60 days of the date of this prospectus are considered outstanding and beneficially owned by the person holding the options for the purpose of computing the percentage ownership of that person but are not treated as outstanding for the purpose of computing the percentage ownership of any other person.

	Shares of common stock beneficially owned prior to this offering			Shares of common stock beneficially owned after this offering (assuming the sale of all shares that may be sold hereunder)	
Name of Selling Stockholder	**Shares of common stock**	**Percentage of Total Outstanding common stock (%) (1)**	**Shares of common stock offered pursuant to this prospectus**	**Shares of common stock**	**Percentage of total outstanding common stock (%)**
Julian McIntyre(2)	2,696,204	8.13 %	2,696,204	—	*
Jeremy Blank(3)	2,224,115	6.70 %	2,224,115	—	*
Arq Limited(4)	1,026,361	3.09 %	1,026,361	—	*
FDAF Dislocated Asset Fund IV LP	925,276	2.79 %	925,276	—	*
FDAF Dislocated Asset Fund II LP	632,528	1.91 %	632,528	—	*
Vitol Energy (Bermuda) Limited	511,392	1.54 %	511,392	—	*
Exuma Capital LP	415,635	1.25 %	415,635	—	*
BNZ Investment SAL	391,030	1.18 %	391,030	—	*
Lacerta Fund	381,639	1.15 %	381,639	—	*
Integrity Coal Sales Inc	374,443	1.13 %	374,443	—	*
Clean Carbon Holdings	267,748	*	267,748	—	*
Richard Campbell-Breeden(5)	149,940	*	149,940	—	*
Infinity Project Management	125,554	*	125,554	—	*
Marsey Holdings LLC	117,697	*	117,697	—	*
Dinan Management LP	110,663	*	110,663	—	*
Gavin Colquhoun	48,150	*	48,150	—	*
Other Stockholders(6)	311,380	*	311,380	—	*

* Designated ownership of less than 1% of our common stock.

(1) Applicable percentage of ownership is based upon 33,180,907 shares of common stock outstanding as of December 29, 2023.

(2) Julian McIntyre, a member of our board of directors, reported being the beneficial owner of 2,696,204 shares, of which 2,636,370 shares are held by Allard Services Limited, 39,271 shares are held by Markham Fuels Management Limited and 20,563 shares are held by Stannard Limited. Mr. McIntyre controls Allard Services Limited and Markham Fuels Management Limited and therefore is an indirect beneficial owner of the securities reported herein. Further, Mr. McIntyre's spouse controls Stannard Limited and therefore Mr. McIntyre may be deemed to be an indirect beneficial owner of the securities reported herein. The securities reported herein do not include those shares of common stock that Mr. McIntyre may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of a tax matter related to the Arq Acquisition.

(3) Jeremy Blank, a member of our board of directors, reported being the beneficial owner of 2,224,115 shares, of which 1,855,388 shares are held by YGF 100 LP ("YGF"), 43,270 shares are held by Community SPV GP LP and 325,457 shares of common stock issuable upon the exercise of a warrant to purchase common stock are held by CF Global Credit LP. Mr. Blank is the ultimate control person of YGF and is an investor in YGF; therefore he is an indirect beneficial owner of a portion of these shares. Further, Mr. Blank is the ultimate control person of Community SPV GP LP. Mr. Blank disclaims beneficial ownership of these shares except to the extent of his pecuniary interest therein. The securities reported herein do not include those shares of common stock that Mr. Blank may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of a tax matter related to the Arq Acquisition.

(4) The securities reported herein include 844,698 shares of common stock held in escrow that Arq Limited stockholders may receive upon the resolution of a tax matter related to the Arq Acquisition.

(5) Richard Campbell-Breeden, a member of our board of directors, reported being the beneficial owner of 149,940 shares, of which 142,542 shares are held by Omeshorn Holdings Limited ("Omeshorn"). Mr. Campbell-Breeden is the ultimate control person of Omeshorn and is an investor in Omeshorn; therefore he is an indirect beneficial owner of a portion of these shares. Mr. Campbell-Breeden disclaims beneficial ownership of these shares except to the extent of his pecuniary interest therein. The securities reported herein do not include those shares of common stock that Mr. Campbell-Breeden may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of tax mater related to the Arq Acquisition.

(6) Includes 30 other stockholders not otherwise listed above, none of which currently owns more than .25% of the Company's common stock. Collectively, these stockholders own less than 1% of the Company's common stock. The securities reported herein do not include those shares of common stock that the stockholders may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of a tax matter related to the Arq Acquisition.

DESCRIPTION OF CAPITAL STOCK

The following descriptions of our capital stock and certain provisions of our second amended and restated certificate of incorporation, our bylaws, as amended, and our Tax Asset Protection Plan (as defined below), as amended, are summaries and are qualified by reference to our second amended and restated certificate of incorporation and bylaws, copies of which have been incorporated by reference as exhibits to the registration statement of which this prospectus forms a part.

Our authorized capital stock consists of 150,000,000 shares of capital stock, par value $0.001 per share, of which:

- 100,000,000 shares are designated as common stock; and
- 50,000,000 shares are designated as preferred stock.

As of December 29, 2023, there were 33,180,907 shares of our common stock outstanding and no shares of our preferred stock outstanding. Our board of directors is authorized, without stockholder approval except as required by the listing standards of Nasdaq, to issue additional shares of our capital stock. 50,000 shares of Series B Junior Participating Preferred Stock, par value $0.001 per share, are authorized and reserved for issuance upon the exercise of the Rights (as defined below) under our Tax Asset Protection Plan, as described below.

Common Stock

As of December 29, 2023, we had 33,180,907 shares of common stock issued and outstanding.

Voting Rights

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders. Our second amended and restated certificate of incorporation does not provide for cumulative voting rights. Our bylaws provide that the election of any director and proposals designated by the directors will be decided by a plurality of the votes cast at a meeting of the stockholders by the holders of stock entitled to vote in the election. With respect to matters other than the election of directors and proposals designated by the director as being subject to a plurality vote, such matters shall be approved if the votes cast favoring the matter exceed the votes cast opposing the mater at a meeting of the stockholders by the holders of stock entitled to vote. The holders of one-third of the voting power of the outstanding shares of Common Stock entitled to vote at the meeting, present in person or represented by proxy, shall constitute a quorum for the transaction of business at all meetings of the stockholders.

Dividends

Our bylaws provide that, subject to applicable law, dividends upon shares of our capital stock may be declared by the board of directors and may be paid in cash, in property or in shares of our capital stock, unless otherwise provided by applicable law.

Liquidation

In the event of our liquidation, dissolution or winding up, whether voluntary or involuntary, after payment or provision for payment of our debts and other liabilities and the preferential amounts to which the holders of any outstanding shares of preferred stock are entitled to receive on dissolution, liquidation, or winding up, the holders of the common stock are entitled to share on a pro rata basis in our remaining assets.

Rights and Preferences

Holders of our common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate in the future.

Fully Paid and Nonassessable

All of our outstanding shares of common stock are fully paid and nonassessable.

Preferred Stock

As of December 29, 2023, there were no shares of preferred stock outstanding.

Our second amended and restated certificate of incorporation provides that our board of directors has the authority, subject to limitations prescribed by Delaware law, to issue preferred stock in one or more series, to establish from time to time the number of shares to be included in each series, and to fix the designation, powers, preferences, and rights of the shares of each series and any of its qualifications, limitations, or restrictions, in each case without further vote or action by our stockholders. Our board of directors also has the authority to increase or decrease the number of shares of any series of preferred stock, but not below the number of shares of that series then outstanding, without any further vote or action by our stockholders. Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring, or preventing a change in control of our company and might adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. We have no current plan to issue any shares of preferred stock.

Warrant

As of December 29, 2023, there was an outstanding warrant to purchase 325,457 shares of our common stock, subject to adjustment as set forth in such warrant. The Warrant has an exercise price of $0.01 per share, subject to adjustment as set forth in the warrant, is exercisable immediately and will expire on February 1, 2030. The terms of the Warrant do not allow for cash exercise, and the Warrant may only be exercised pursuant to the terms thereof.

Anti-Takeover Provisions

Certain provisions of Delaware law, and our amended and restated certificate of incorporation and amended and restated bylaws, which are summarized below, may have the effect of delaying, deferring, or discouraging another person from acquiring control of us. They are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

Delaware Takeover Statute and Certain Business Combinations

We have elected not to be governed by the provisions of Section 203 of the DGCL. In general, Section 203 prohibits a public Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, subject to certain exceptions. Our second amended and restated certificate of incorporation includes provisions requiring certain business combinations to be approved by the affirmative vote of the holders of at least a majority of the voting power of the then outstanding voting stock, voting together as a single class, including the affirmative vote of the holders of at least a majority of the voting power of the then outstanding voting stock not owned directly or indirectly by any interested stockholder (i.e. a person who owns 10% or more of our outstanding voting stock) or any affiliate of an interested stockholder. Subject to some exceptions set forth in the second amended and restated certificate of incorporation, such affirmative vote shall be required notwithstanding the fact that no vote may be required, or that a lesser percentage may be permitted, by applicable law or in any agreement with any national securities exchange or otherwise.

Removal of Directors; Vacancies.

The DGCL provides that a director may be removed, with or without cause, by the holders of a majority of the shares entitled to vote at an election of directors. Our bylaws provide that newly created directorships resulting from an increase in the authorized number of directors and any vacancies occurring in the board of directors, may be filled by the affirmative votes of a majority of the remaining members of the board of directors, although less than a quorum. A director so elected shall hold office until the earlier of the expiration of the term of office of the director whom he or she has replaced, a successor is duly elected and qualified or the earlier of such director's death, resignation or removal.

No Cumulative Voting. The DGCL provides that stockholders are not entitled to cumulate votes in the election of directors unless a corporation's certificate of incorporation provides otherwise. Our second amended and restated certificate of incorporation does not provide for cumulative voting.

Stockholder Meetings; Requirements for Advance Notice. Our bylaws provide that special meetings of stockholders for any purpose or purposes may be called pursuant to a resolution approved by the board of directors or by the holders of shares entitled to cast not less than 20% of the votes at the meeting, and shall be held at such place, on such date, and at such time as the board of directors shall fix. Our bylaws provide that notice of the place, if any, date, hour, the record date for determining the stockholders entitled to vote at the meeting (if such date is different from the record date for stockholders entitled to notice of the meeting) and means of remote communication, if any, of every meeting of stockholders shall be given not less than ten days nor more than 60 days before such meeting (unless a different time is specified by law) to every stockholder entitled to vote at the meeting as of the record date for determining the stockholders entitled to notice of the meeting and that notices of special meetings shall also specify the purpose or purposes for which the meeting has been called.

Authorized but Unissued Shares. Our authorized but unissued shares of common stock and preferred stock will be available for future issuances without stockholder approval, except as required by the listing standards of Nasdaq, and could be utilized for a variety of corporate purposes, including future offerings to raise additional capital, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock and preferred stock could render more difficult or discourage an attempt to obtain control of the company by means of a proxy contest, tender offer, merger or otherwise.

Tax Asset Protection Plan. On May 5, 2017, our board of directors approved the Tax Asset Protection Plan (the "Original TAPP", and as amended up to the date of this prospectus, the "TAPP") and declared a dividend of one preferred share purchase right (each, a "Right") for each outstanding share of our common stock. During the years 2018-2023, we executed amendments to the TAPP (the "TAPP Amendments"), which extend the duration of the TAPP to a later "Final Expiration Date" and make associated changes in connection therewith. The most recent TAPP Amendment was approved at our 2023 annual meeting of stockholders and extended the Final Expiration Date to the close of business on December 31, 2024.

Subject to the terms, provisions and conditions of the TAPP, if the Rights become exercisable, each Right would initially represent the right to purchase one ten-thousandth of a shares of our Series B Junior Participating Preferred Stock, par value $0.001 per share, for a purchase price of $50.00, subject to certain adjustments. The description and terms of the Rights were set forth in the Original TAPP, dated as of May 5, 2017, by and between us and Computershare Trust Company, N.A., as Rights Agent, as amended.

The TAPP was adopted in an effort to protect stockholder value by attempting to diminish the risk that our ability to use certain general business credits carryforwards to reduce potential future federal income tax obligations may become substantially limited if we experience an "ownership change," as defined by Section 382 of the Internal Revenue Code. The TAPP is intended to act as a deterrent to any person acquiring beneficial ownership of 4.99% or more of our outstanding common stock without the approval of the board of directors. Stockholders who beneficially owned 4.99% or more of our outstanding common stock upon execution of the TAPP will not trigger the TAPP so long as they do not acquire beneficial ownership of additional shares of our common stock. The board of directors may, in its sole discretion, also exempt any person from triggering the TAPP.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

Limitations of Liability and Indemnification

Our bylaws provide that the Company is only authorized to provide indemnification to present or former directors or officers after a determination to do so (i) by a majority vote of the directors who are not parties to such action, suit or proceeding, even though less than a quorum, or (ii) by a committee of such directors designated by a majority vote of such directors, even though less than a quorum, or (iii) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion, or (iv) by the stockholders.

If a determination to provide indemnification is made, then to the fullest extent permitted by applicable law, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation), by reason of the fact that such person is or was a director or officer of the corporation, or is or was a director or officer of the corporation serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe such person's conduct was unlawful, except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery of the State of Delaware or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Our second amended and restated certificate of incorporation and amended and restated bylaws further provide that to the fullest extent permitted by law, a director shall not be personally liable to the Company or to our stockholders for monetary damages for any breach of fiduciary duty as a director. No amendment to, modification of or repeal of this provision shall apply to or have any effect on the liability or alleged liability of any director for or with respect to any acts or omissions of such by a director occurring prior to such amendment.

The limitation of liability and indemnification provisions in our organizational documents may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against directors and officers, even though an action, if successful, might benefit us and our stockholders. Moreover, a stockholder's investment may be harmed to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable. There is no pending litigation or proceeding naming any of our directors or officers as to which indemnification is being sought, nor are we aware of any pending or threatened litigation that may result in claims for indemnification by any director or officer.

Listing

Our common stock is listed on Nasdaq under the symbol "ADES."

PLAN OF DISTRIBUTION

The selling stockholders may offer and sell, from time to time, some or all of the shares of common stock covered by this prospectus. Registration of the shares of common stock covered by this prospectus does not mean, however, that those shares necessarily will be offered or sold, or if they are, that they will be sold pursuant to this prospectus. We will not receive any proceeds from any sale by the selling stockholders of their shares of common stock. See "Use of Proceeds." We will pay all costs, expenses and fees incurred by the Company in connection with the registration of the shares of common stock, including fees of our counsel and accountants, and fees payable to the SEC. The selling stockholders will pay all legal fees incurred by the selling stockholders in connection with the registration of the shares of common stock, as well as any underwriting discounts and commissions and similar selling expenses, if any, attributable to the sale of the shares of common stock covered by this prospectus.

The selling stockholders may sell the shares of common stock covered by this prospectus from time to time, at market prices prevailing at the time of sale, at prices related to market prices, at a fixed price or prices subject to change or at negotiated prices, in any manner permitted by the Securities Act, including any one or more of the following ways:

- on any national securities exchange or quotation service on which the shares may be listed or quoted at the time of sale;
- in privately negotiated transactions;
- through broker-dealers, who may act as agents or principals;
- in a block trade in which a broker-dealer will attempt to sell a block of shares of common stock as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- through one or more underwriters on a firm commitment or best-efforts basis;
- directly to one or more purchasers;
- through selling agents; or
- in any combination of the above.

In effecting sales, brokers or dealers engaged by a selling stockholder may arrange for other brokers or dealers to participate. Broker-dealer transactions may include:

- purchases of the shares of common stock by a broker-dealer as principal and resales of the shares of common stock by the broker-dealer for its account pursuant to this prospectus;
- ordinary brokerage transactions; or
- transactions in which the broker-dealer solicits purchasers.

At any time a particular offer of the shares of common stock covered by this prospectus is made, a prospectus supplement, if required, will be distributed which will set forth the aggregate amount of shares of common stock covered by this prospectus being offered and the terms of the offering, including the name or names of any underwriters, dealers, brokers or agents, any option under which underwriters may purchase additional shares of common stock from the selling stockholder(s), any discounts, commissions, concessions and other items constituting compensation from the selling stockholder(s) and any discounts, commissions or concessions allowed or reallowed or paid to dealers. Such prospectus supplement, and, if necessary, a post-effective amendment to the registration statement of which this prospectus is a part, will be filed with the SEC to reflect the disclosure of additional information with respect to the distribution of the shares of common stock covered by this prospectus.

In connection with the sale of the shares of common stock covered by this prospectus through underwriters, underwriters may receive compensation in the form of underwriting discounts or commissions and may also receive commissions from purchasers of shares of common stock for whom they may act as agent. Underwriters may sell to or through dealers, and such dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they may act as agent.

Any underwriters, broker-dealers or agents participating in the distribution of the shares of common stock covered by this prospectus may be deemed to be "underwriters" within the meaning of the Securities Act, and any commissions received by any of those underwriters, broker-dealers or agents may be deemed to be underwriting commissions under the Securities Act. The selling stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act.

Selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions. In connection with such transactions, broker-dealers or other financial institutions may engage in short sales of shares of common stock in the course of hedging transactions, broker-dealers or other financial institutions may engage in short sales of shares of common stock in the course of hedging the positions they assume with a selling stockholder. Selling stockholders may also sell shares of common stock short and redeliver the securities to close out such short positions. Selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions which require the delivery to such broker-dealer or other financial institution of shares of common stock offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus, as supplemented or amended to reflect such transaction to the extent required. Selling stockholders may also pledge shares of common stock offered hereby to a broker-dealer or other financial institution, and, upon a default, such broker-dealer or other financial institution, may effect sales of the pledged securities pursuant to this prospectus, as supplemented or amended to reflect such transaction to the extent required.

The selling stockholders may enter into derivative transactions with third parties, or sell shares of common stock to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell shares of common stock covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use shares of common stock pledged by a selling stockholder or borrowed from a selling stockholder or others to settle those sales or to close out any related open borrowings of stock, and may use shares of common stock received from such selling stockholder in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be identified in the applicable prospectus supplement (or a post-effective amendment).

The selling stockholders may authorize underwriters, dealers and agents to solicit from third parties offers to purchase shares of common stock under contracts providing for payment and delivery on future dates. The applicable prospectus supplement will describe the material terms of these contracts, including any conditions to the purchasers' obligations, and will include any required information about commissions the selling stockholders may pay for soliciting these contracts.

Agents, underwriters and dealers may be entitled under agreements which may be entered into with us or selling stockholders to indemnification by us or selling stockholders against specified liabilities, including liabilities incurred under the Securities Act, or to contribution by us or selling stockholders to payments it may be required to make in respect of such liabilities. The prospectus supplement will describe the terms and conditions of such indemnification or contribution. Some of the agents, underwriters or dealers, or their affiliates may be customers of, engage in transactions with or perform services for us or our subsidiaries in the ordinary course of business.

In connection with the offering, the underwriters may purchase and sell shares of common stock in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in the offering. "Covered" short sales are sales made in an amount not greater than the underwriters' option to purchase additional shares from the selling stockholders in the offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the overallotment option. "Naked" short sales are any sales in excess of such option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of various bids for or purchases of common stock made by the underwriters in the open market prior to the completion of the offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Purchases to cover a short position and stabilizing transactions may have the effect of preventing or retarding a decline in the market price of the Company's stock, and together with the imposition of the penalty bid, may stabilize, maintain or otherwise affect the market price of the common stock. As a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. If these activities are commenced, they may be discontinued at any time.

Certain underwriters, agents or dealers or their affiliates may have provided from time to time, and may provide in the future, investment, commercial banking, derivatives and financial advisory services to the Company, the selling stockholders and their respective affiliates in the ordinary course of business, for which they have received or may receive customary fees and commissions.

In addition, a selling stockholder that is an entity may elect to make a pro rata in-kind distribution of securities to its members, partners or stockholders pursuant to the registration statement of which this prospectus is a part by delivering a prospectus.

Such members, partners or stockholders would thereby receive freely tradeable securities pursuant to the distribution through the registration statement of which this prospectus is a part. To the extent a distributee is an affiliate of ours (or to the extent otherwise required by law), we may file a prospectus supplement in order to permit the distributees to use the prospectus to resell the securities acquired in the distribution.

Some of the shares of common stock covered by this prospectus may be sold in private transactions or under Rule 144 under the Securities Act rather than pursuant to this prospectus.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Gibson, Dunn & Crutcher LLP. Certain legal matters in connection with the shares of common stock offered hereby may be passed upon for any underwriters, dealers or agents by counsel named in the applicable prospectus supplement.

EXPERTS

The consolidated financial statements of Advanced Emissions Solutions, Inc. and subsidiaries (the "Company") as of December 31, 2022 and 2021 and for the years then ended, incorporated in this prospectus by reference from the Annual Report on Form 10-K of the Company for the year ended December 31, 2022, and the effectiveness of internal control over financial reporting, have been audited by Moss Adams, LLP, an independent registered public accounting firm, as stated in their reports, which are incorporated herein by reference. Such consolidated financial statements are incorporated by reference in reliance upon the reports of such firm given their authority as experts in accounting and auditing.

The consolidated financial statements of Arq Limited as of 31 December 2022 and 2021, and for each of the two years in the period ended 31 December 2022, appearing in this registration statement have been audited by Ernst & Young LLP, independent auditors, as set forth in their report thereon (which contains an explanatory paragraph describing a basis of preparation other than going concern as described in Note 2 to the consolidated financial statements) appearing elsewhere herein, and are included in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

10,709,755 Shares

Advanced Emissions Solutions, Inc.

Common Stock

Prospectus

Advanced Emissions Solutions, Inc.
Advancing Cleaner Energy

, 2023

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the fees and expenses, other than underwriting discounts and commissions, payable by us in connection with the offering described in this registration statement. All amounts shown are estimates other than the SEC registration fee and the FINRA filing fee.

SEC registration fee	$	4,331
FINRA filing fee		*
Printing fees and expenses		*
Legal fees and expenses		*
Accounting fees and expenses		*
Miscellaneous expenses		*
Total	$	*

* The applicable prospectus supplement will set forth the estimated aggregate amount of expenses payable in respect of any offering of securities.

Item 14. Indemnification of Directors and Officers.

Section 145 of the DGCL provides that a corporation may indemnify directors and officers as well as other employees and individuals against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any threatened, pending or completed actions, suits or proceedings in which such person is made a party by reason of such person being or having been a director, officer, employee or agent to the registrant. The DGCL provides that Section 145 is not exclusive of other rights to which those seeking indemnification may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise. Our amended and restated bylaws that will be effective upon the closing of this offering provide for indemnification by the registrant of its directors, officers and employees to the fullest extent permitted by the DGCL.

Section 102(b)(7) of the DGCL permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for unlawful payments of dividends or unlawful stock repurchases, redemptions or other distributions, or (iv) for any transaction from which the director derived an improper personal benefit. Our amended and restated certificate of incorporation that will be effective upon the closing of this offering provides for such limitation of liability.

We maintain standard policies of insurance under which coverage is provided (a) to our directors and officers against loss arising from claims made by reason of breach of duty or other wrongful act, and (b) to us with respect to payments we may make to our officers and directors pursuant to the above indemnification provision or otherwise as a matter of law.

In addition, any Underwriting Agreement to be filed and incorporated by reference as an exhibit to this registration statement may provide for indemnification of our directors and officers by the underwriters against certain liabilities.

Item 15. Recent Sales of Unregistered Securities.

Within the past three years, the Registrant has sold the following securities:

On February 1, 2023, we entered into a Securities Purchase Agreement (the "Purchase Agreement") with Arq Limited, pursuant to which the Company acquired all of the direct and indirect equity interests of Arq's subsidiaries (collectively, the "Purchased Interests") in exchange for consideration consisting of (i) 3,814,864 shares of common stock, par value $0.001 per share, of ADES (the "Common Stock"), representing 19.9% of the outstanding shares of Common Stock prior to the completion of the transactions contemplated by the Purchase Agreement, and (ii) 5,294,462 shares of Series A Convertible Preferred Stock, par value

$0.001 per share, of ADES (the "Series A Preferred Stock" and the acquisition by ADES of the Purchased Interests, the "Transaction"). At our 2023 Annual Meeting of Stockholders held on June 13, 2023, our stockholders approved the conversion of all shares of the Series A Preferred Stock into common stock and the conversion of such shares occurred on such date. The issuance of the securities in the Transaction was deemed to be exempt from registration under the Securities Act in reliance upon Section 4(a)(2) of the Securities Act, and did not involve any underwriters, underwriting discounts or commissions or any public offering.

In connection with the Transaction, on February 1, 2023, the Company also issued CF Global Credit LP warrant to purchase 325,457 shares of common stock at an exercise price of $0.01 per share. The warrant has a term of 10 years and contains a cashless exercise provision. The issuance of the warrant was deemed to be exempt from registration under the Securities Act in reliance upon Section 4(a)(2) of the Securities Act, and did not involve any underwriters, underwriting discounts or commissions or any public offering.

On February 1, 2023, the Company further entered into subscription agreements (the "Investor Subscription Agreements") with certain persons pursuant to which certain persons (the "Subscribers") subscribed for and purchased shares of Common Stock for an aggregate purchase price of approximately $15.4 million and at a price per share of $4.00 (the "PIPE Price Per Share" and such transaction, the "PIPE Investment"). The securities issued to the Subscribers under the Investor Subscription Agreements were issued pursuant to an exemption from registration under Section 4(a)(2) of the Securities Act of 1933, as amended (the "Securities Act"), Rule 506 of Regulation D, which is promulgated thereunder, and Regulations S of the Securities Act. ADES is relying on this exemption from registration based in part on representations made by each of the Subscribers under the Investor Subscription Agreements.

On July 17, 2023, the Company entered into a Subscription Agreement (the "Subscription Agreement") with Mr. Robert Rasmus and entities controlled by Mr. Rasmus, in connection with his appointment as the Company's President and Chief Executive Officer. Pursuant to the Subscription Agreement, Mr. Rasmus subscribed for and agreed to purchase 950,000 shares of Common Stock from the Company for an aggregate purchase price of $1.8 million (at a price per share of approximately $1.90). In September 2023, the Company received cash of $1.0 million and issued 527,779 shares of Common Stock to Mr. Rasmus pursuant to the Subscription Agreement. The Company expects to receive the remaining cash of $0.8 million due under the Subscription Agreement during the first quarter of 2024 and, when received, will issue Mr. Rasmus 422,221 shares of Common Stock. The issuance of the Common Stock pursuant to the Subscription Agreement was deemed to be exempt from registration under the Securities Act in reliance upon Section 4(a)(2) of the Securities Act.

Item 16. Exhibits and Financial Statement Schedules.

Exhibit Number	Description
1.1*	Form of Underwriting Agreement.
3.1	Second Amended and Restated Certificate of Incorporation of Advanced Emissions Solutions, Inc. (filed with the SEC as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q filed with the SEC on August 9, 2013 and incorporated herein by reference).
3.2	Conformed Copy of the Bylaws of Advanced Emissions Solutions, Inc. (filed with the SEC as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q filed with the SEC on November 8, 2023 and incorporated herein by reference).
3.3	Certificate of Designation, Preferences, and Rights of Series B Junior Participating Preferred Stock of Advanced Emissions Solutions, Inc. (incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K (File No. 001-37822) filed by Advanced Emissions Solutions, Inc. with the SEC on May 8, 2017).
4.1	Tax Asset Protection Plan dated as of May 5, 2017, by and between the Company and Computershare Trust Company N.A., as rights agent, which includes as Exhibit B the Form of Rights Certificate (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K (File No. 001-37822) filed by Advanced Emissions Solutions, Inc. with the SEC on May 8, 2017).
4.2	First Amendment to Tax Asset Protection Plan, dated as of April 6, 2018 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K (File No. 001-37822) filed on April 11, 2018).
4.3	Second Amendment to Tax Asset Protection Plan, dated as of April 5, 2019 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K (File No. 001-37822) filed on April 11, 2019).
4.4	Third Amendment to Tax Asset Protection Plan, dated as of April 8, 2020 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.4 to the Current Report on Form 8-K (File No. 001-37822) filed on April 9, 2020).

4.5	Fourth Amendment to Tax Asset Protection Plan, dated as of April 9, 2021 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.5 to the Current Report on Form 8-K (File No. 001-37822) filed on April 13, 2021).
4.6	Fifth Amendment to Tax Asset Protection Plan, dated as of March 15, 2022 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.6 to the Current Report on Form 8-K (File No. 001-37822) filed on March 16, 2022).
4.7	Sixth Amendment to Tax Asset Protection Plan, dated as of April 13, 2023 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.7 to the Current Report on Form 8-K (File No. 001-37822) filed on April 14, 2023).
4.8	Form of Warrant (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K (File No. 002-37822) filed on February 1, 2023).
5.1	Opinion of Gibson, Dunn & Crutcher LLP.
10.1	Advanced Emissions Solutions, Inc. 2017 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-37822) filed on June 22, 2017).**
10.2	Advanced Emissions Solutions, Inc. 2022 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-37822) filed on May 17, 2022).**
10.3	Form of Amendment No. 2 to Employment Agreement of Greg Marken** (incorporated by reference to Exhibit 10.1 to the Current Report on Form 10-Q (File No. 001-37822) filed on August 6, 2018).**
10.4	Employment Agreement dated February 26, 2021 between the Company and Morgan Fields (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-37822) filed on March 3, 2021).**, ***
10.5	Second Amended and Restated Operating Agreement of Clean Coal Solutions, LLC dated May 27, 2011, by and among Clean Coal Solutions, LLC, ADA-ES, Inc., GSFS Investments I Corp. and NexGen Refined Coal, LLC (incorporated by reference to Exhibit 10.33 to the Current Report on Form 10-Q/A (File No. 000-50216) filed on September 28, 2011).***
10.6	The First Amendment to the Second Amended and Restated Operating Agreement of Clean Coal Solutions, LLC, by and among Clean Coal Solutions, LLC, ADA-ES, Inc., GSFS Investments I Corp. and NexGen Refined Coal, LLC dated September 9, 2011 (incorporated by reference to Exhibit 10.89 to the Current Report on Form 10-Q (File No. 000-50216) filed on November 14, 2011).
10.7	Second Amendment to the Second Amended and Restated Operating Agreement of Clean Coal Solutions, LLC by and among ADA-ES, Inc., NexGen Refined Coal, LLC and GSFS Investments I Corp. dated July 31, 2012 (incorporated by reference to Exhibit 10.59 to the Current Report on Form 10-Q (File No. 000-50216) filed November 9, 2012).
10.8	Contribution Agreement dated May 27, 2011 between ADA-ES, Inc. and NexGen Refined Coal, LLC (incorporated by reference to Exhibit 10.87 to the Current Report on Form 10-Q (File No. 000-50216) filed August 12, 2011).
10.9	Amended and Restated Limited Liability Company Operating Agreement by and between ADA-ES, Inc., NexGen Refined Coal, LLC and Clean Coal Solutions Services, LLC dated November 20, 2013 (incorporated by reference to Exhibit 10.38 to the Current Report on Form 10-K (File No. 000-54992) filed February 29, 2016).
10.10	Amended and Restated License Agreement between ADA-ES, Inc. and Clean Coal Solutions, LLC dated October 30, 2009 (incorporated by reference to Exhibit 10.77 to the Current Report on Form 10-Q (File No. 000-50216) filed August 16, 2010).
10.11	First Amendment to the Amended and Restated License Agreement between ADA-ES, Inc. and Clean Coal Solutions, LLC dated as of August 4, 2010 (incorporated by reference to Exhibit 10.81 to the Current Report on Form 10-K (File No. 000-50216) filed March 28, 2011).
10.12	Second Amendment to Amended and Restated License Agreement by and between ADA-ES, Inc. and Clean Coal Solutions, LLC dated as of July 23, 2013 (incorporated by reference to Exhibit 10.63 to the Current Report on Form 10-Q (File No. 000-54992) filed November 12, 2013).***
10.13	Technology Sublicense Agreement between ADA-ES, Inc., Clean Coal Solutions, LLC, and GS RC Investments LLC dated June 29, 2010 (incorporated by reference to Exhibit 10.74 to the Current Report on Form 10-Q (File No. 000-50216) filed August 16, 2010).
10.14	Amendment to Technology Sublicense Agreement between ADA-ES, Inc., GS RC Investments, LLC, and Clean Coal Solutions, LLC dated November 21, 2011 (incorporated by reference to Exhibit 10.44 to the Current Report on Form 10-K (File No. 000-54992) filed February 29, 2016).***
10.15	Amendment #2 to Technology Sublicense Agreement between ADE-ES, Inc, GS RC Investments, LLC, and Clean Coal Solutions, LLC dated December 15, 2011 (incorporated by reference to Exhibit 10.49 to the Current Report on Form 10-K (File No. 000-50216) filed March 15, 2012).
10.16	M-45 Technology License Agreement between ADA-ES, Inc. and Clean Coal Solutions, LLC dated July 27, 2012 (incorporated by reference to Exhibit 10.58 to the Current Report on Form 10-Q (File No. 000-50216) filed November 9, 2012).***

10.17	Lignite Mining Agreement between Demery Resources Company, L.L.C. and Five Forks Mining, LLC dated as of June 29, 2009 (incorporated by reference to Exhibit 10.43 to the Current Report on Form 10-K (File No. 001-37822) filed March 18, 2019).***
10.18	First Amendment to Lignite Mining Agreement between Demery Resources Company, L.L.C. and Five Forks Mining, LLC, dated as of March 22, 2017 (incorporated by reference to Exhibit 10.44 to the Current Report on Form 10-K (File No. 001-37822) filed March 18, 2019).***
10.19	Third Amendment to the Second Amended and Restated Operating Agreement of Tinuum Group, LLC. dated September 4, 2019 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 10-Q (File No. 001-37822) filed November 12, 2019).***
10.20	Master Agreement for Supply of Furnace Products between ADA Carbon Solutions, LLC and Cabot Norit Americas, Inc. (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-37822) filed September 30, 2020).***
10.21	Membership Interest Purchase Agreement between Caddo Creek Resources Company, L.L.C., as Buyer, and ADA Carbon Solutions (Operations), LLC, as Seller dated as of September 2, 2022 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K (File No. 001-37822) filed September 6, 2022).***
10.22	Securities Purchase Agreement, dated as of February 1, 2023, by and among Advanced Emissions Solutions, Inc. and Arq Limited (incorporated by reference to Exhibit 2.1 to the Current Report on Form 8-K (File No. 001-37822) filed February 1, 2023).***
10.23	Registration Rights Agreement (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-37822) filed February 1, 2023).***
10.24	Term Loan and Security Agreement among Advanced Emissions Solutions, Inc., as Debtor, Certain Subsidiaries of Debtor, as Guarantors, CF Global Credit, LP, as Administrative Agent, and the Lenders, from time to time party hereto, dated as of February 1, 2023 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K (File No. 001-37822) filed February 1, 2023).***
10.25	Loan Agreement among Community Trust Bank, Inc.; Corbin Project LLC, Arq Projects Holding Company LLC, Arq St. Rose LLC, Arq Corbin LLC and Arq Corbin Land LLC, dated January 27, 2021 (incorporated by reference to Exhibit 10.35 to the Annual Report on Form 10-K (File No. 001-37822) filed March 8, 2023).†
10.26	Loan Modification Agreement dated as of June 2, 2023 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K (File No. 001-37822) filed June 6, 2023.***
10.27	Subscription Agreement by and between Robert E. Rasmus, RER Legacy Investments II LLC and Advanced Emissions Solutions, Inc., dated July 17, 2023 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-37822) filed July 17, 2023.
10.28	Employment Agreement by and between Robert E. Rasmus and Advanced Emissions Solutions, Inc., dated July 17, 2023 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K (File No. 001-37822) filed July 17, 2023.
10.29	Employment Agreement by and between Jeremy D. Williamson and Advanced Emissions Solutions, Inc., dated September 18, 2023 (incorporated by reference to Exhibit 10.3 to the Current Report on Form 8-K (File No. 001-37822) filed July 17, 2023.
10.30	Employment Agreement by and between Stacia Hansen and Advanced Emissions Solutions, Inc., dated November 6, 2023 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-37822) filed November 8, 2023.
23.1	Consent of Moss Adams LLP.
23.2	Consent of Ernst & Young LLP, UK.
23.3	Consent of Gibson, Dunn & Crutcher LLP (included in Exhibit 5.1).
24.1	Power of Attorney (included on the signature page to the initial filing of this registration statement).
99.1	Audited consolidated financial statements of Arq Ltd as of December 31, 2022 and December 31, 2021 and for each of the two years in the years then ended, and the notes thereto
107	Filing Fee Table.

* To be filed by amendment or as an exhibit to a document to be incorporated by reference herein in connection with an offering of securities.

agement contract or compensatory plan or arrangement.

*** Portions of this exhibit have been omitted pursuant to a request for confidential treatment.

† Schedules and exhibits have been omitted pursuant to Item 601(a)(5) of Regulation S-K. The Company hereby undertakes to furnish supplemental copies of any of the omitted schedules and exhibits upon request by the SEC.

Item 17. Undertakings.

The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement;

provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of this registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining any liability under the Securities Act of 1933 to any purchaser, each prospectus filed by the registrant pursuant to Rule 424(b) as part of this registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in this registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in this registration statement or prospectus that is part of this registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(5) That, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act of 1934) that is incorporated by reference in this registration statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(6) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the indemnification provisions described herein, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being

registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

(7) That, for purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(8) That, for the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant has duly caused this Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Greenwood Village, Colorado, on January 4, 2024.

ADVANCED EMISSIONS SOLUTIONS, INC.

By: /s/ Robert Rasmus
Name: Robert Rasmus
Title: Chief Executive Officer

The undersigned directors and officers of Advanced Emissions Solutions, Inc. hereby constitute and appoint Robert Rasmus and Stacia Hansen, and each of them, any of whom may act without joinder of the other, as the individual's true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for the person and in his or her name, place and stead, in any and all capacities, to sign this Registration Statement and any or all amendments, including post-effective amendments to the Registration Statement, including a prospectus or an amended prospectus therein and any Registration Statement for the same offering that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act, and all other documents in connection therewith to be filed with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact as agents or any of them, or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, the following persons have signed this Registration Statement in the capacities and on the date indicated.

Name	Title	Date
/s/ Robert Rasmus Robert Rasmus	Chief Executive Officer (Principal Executive Officer)	January 4, 2024
/s/ Stacia Hansen Stacia Hansen	Chief Accounting Officer (Principal Accounting and Financial Officer)	January 4, 2024
/s/ Jeremy Blank Jeremy Blank	Director	January 4, 2024
/s/ Laurie Bergman Laurie Bergman	Director	January 4, 2024
/s/ Richard Campbell-Breeden Richard Campbell-Breeden	Director	January 4, 2024
/s/ Carol Eicher Carol Eicher	Director	January 4, 2024

/s/ Gilbert Li Gilbert Li	Director	January 4, 2024
/s/ Julian McIntyre Julian McIntyre	Director	January 4, 2024
/s/ L. Spencer Wells L. Spencer Wells	Director	January 4, 2024

Calculation of Filing Fee Tables

FORM S-1

(Form Type)

Advanced Emissions Solutions, Inc.

(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered(1)	Proposed Maximum Offering price Per Unit	Maximum Aggregate Offering Price(2)	Fee Rate	Amount of Registration Fee
Fees to be Paid	Equity	Common stock, par value $0.001 per share	457(a) and 457(c)	10,709,755	2.74	$ 29,344,729	0.0001476	$ 4,331
Fees Previously Paid								
	Total Offering Amounts					$ 29,344,729		$ 4,331
	Total Fees Previously Paid							$ —
	Total Fee Offsets							$ —
	Net Fee Due							$ 4,331

(1) Pursuant to Rule 416 under the Securities Act of 1933, as amended, the shares being registered hereunder include such indeterminate number of shares of common stock as may be issuable with respect to the shares being registered hereunder, as a result of stock splits, stock dividends or other similar transactions.

(2) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(c) under the Securities Act of 1933, as amended, based on the average of the high and low prices of a share of common stock on The Nasdaq Global Market on January 3, 2024, which was $2.74

Gibson, Dunn & Crutcher LLP

2001 Ross Avenue
Dallas, TX 75201
Tel 214.698.3100
gibsondunn.com

January 4, 2024

Advanced Emissions Solutions, Inc.
8051 E. Maplewood Ave., Suite 210
Greenwood Village, CO 80111

Re: *Advanced Emissions Solutions, Inc.*

Registration Statement on Form S-1

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-1 (the "Registration Statement") of Advanced Emissions Solutions, a Delaware corporation (the "Company"), to be filed on the date hereof with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), in connection with the registration by the Company for resale from time to time by the selling stockholders identified in the Registration Statement (the "Selling Stockholders") of (a) up to 10,709,755 shares of the Company's common stock, par value $0.001 per share (the "Common Stock"), beneficially owned by the Selling Stockholders, 10,384,298 of which are issued and outstanding on the date hereof (the "Outstanding Shares") and the remainder of which are issuable from time to time upon conversion of the Warrant to Purchase Shares of Common Stock of the Company (the "Warrant") held by a certain Selling Stockholder as of the date hereof (the "Warrant Shares"), and (b) the associated preferred share purchase rights (the "Rights"), the terms of which are set forth in the Tax Asset Protection Plan, dated as of May 5, 2017, by and between the Company and Computershare Trust Company, N.A., as Rights Agent (as amended through the date hereof, the "TAPP").

In arriving at the opinions expressed below, we have examined originals, or copies certified or otherwise identified to our satisfaction as being true and complete copies of the originals, of such documents, corporate records, certificates of officers of the Company and of public officials and other instruments as we have deemed necessary or advisable to enable us to render the opinions set forth below. In our examination, we have assumed without independent investigation the genuineness of all signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies.

Based upon the foregoing, and subject to the assumptions, exceptions, qualifications and limitations set forth herein, we are of the opinion that:

1. The Outstanding Shares are validly issued, fully paid and non-assessable and the Rights associated with the Outstanding Shares are validly issued.

2. The Warrant Shares, when and if issued from time to time upon conversion of the Warrant in accordance with its terms, and for any additional consideration specified therein, which consideration, on a per-share basis, shall not be less than the par value of the Common Stock, will be validly issued, fully paid and non-assessable and the Rights associated with the Warrant Shares will be validly issued.

With respect to our opinions concerning the Rights, we express no opinion regarding the TAPP or whether or not the Board of Directors of the Company in adopting the TAPP and approving the issuance of the Rights acted in a manner consistent with its fiduciary duties under applicable law and such opinions are based upon the assumption that such adoption and issuance was consistent with such duties. Furthermore, we advise you that the Board of Directors of the Company may be required to redeem or terminate, or take other action with respect to, the Rights at some future time based on the facts and circumstances existing at that time.

A. We render no opinion herein as to matters involving the laws of any jurisdiction other than the Delaware General Corporation Law. This opinion is limited to the effect of the current state of Delaware General Corporation Law and the facts as they currently exist. We assume no obligation to revise or supplement this opinion in the event of future changes in such laws or the interpretations thereof or such facts.

We consent to the filing of this opinion as an exhibit to the Registration Statement, and we further consent to the use of our name under the caption “Legal Matters” in the Registration Statement and the prospectus that forms a part thereof. In giving these consents, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ Gibson, Dunn & Crutcher LLP

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in this Registration Statement on Form S-1 of Advanced Emissions Solutions, Inc., of our reports dated March 8, 2023, relating to the consolidated financial statements of Advanced Emissions Solutions, Inc. and subsidiaries (the "Company") and the effectiveness of internal control over financial reporting of the Company, appearing in the Annual Report on Form 10-K of the Company for the year ended December 31, 2022, filed with the Securities and Exchange Commission. We also consent to the reference to us under the heading "Experts" in such Registration Statement.

/s/ Moss Adams LLP

Denver, Colorado
January 4, 2024

Exhibit 23.2

CONSENT OF INDEPENDENT AUDITORS

We consent to the reference to our firm under the caption "Experts" and to the use of our report dated 4 January 2024, with respect to the consolidated financial statements of Arq Limited included in this registration statement (Form S-1) and related prospectus of Advanced Emissions Solutions, Inc. dated 4 January 2024.

/s/ Ernst & Young LLP
London, United Kingdom
4 January 2024

ARQ LIMITED
Consolidated Financial Statements
For the years ended 31 December 2022 and 2021

Report of Independent Auditors

To the Board of Directors of Arq Limited

Opinion

We have audited the consolidated financial statements of Arq Limited (the Company), which comprise the consolidated balance sheet as of 31 December 2022 and 2021, and the related consolidated income statement and other comprehensive income, statement of changes in equity and cash flows for the years then ended, and the related notes (collectively referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Company at 31 December 2022 and 2021, and the results of its operations and its cash flows for the years then ended in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB).

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Company and to meet our other ethical responsibilities in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Basis of preparation other than Going Concern

As discussed in Note 2b to the financial statements, the Company plans to liquidate within 12 months of approving these financial statements. Based on the intention and plan by management to liquidate the Company, these financial statements have been prepared on a basis other than going concern. Our opinion is not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with IFRS as issued by the IASB, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free of material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free of material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS, we:

1. Exercise professional judgment and maintain professional skepticism throughout the audit.
2. Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
3. Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.

4. Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
5. Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

/s/ Ernst & Young LLP
London, United Kingdom
4 January 2024

ARQ LIMITED
Consolidated Income Statement and Other Comprehensive Income
For the years ended 31 December 2022 and 2021

	Notes	2022 $'000	2021 $'000
Plant operating expenses	**6**	51,316	96,172
Research and development expense		1,815	4,003
Administration expenses	**7**	14,084	15,794
Operating loss		**(67,215)**	**(115,969)**
Finance expense	**8**	(20,136)	(699)
Gain on changes to liabilities and debt	**9**	11,267	-
Other income		299	51
Other expenses		(88)	(22)
Loss before tax		**(75,873)**	**(116,639)**
Income tax income	**10**	442	915
Net loss for the financial year		**(75,431)**	**(115,724)**
Other comprehensive income		-	-
Total comprehensive loss for the financial year		**(75,431)**	**(115,724)**
Attributable to			
Equity shareholders of the company		**(75,431)**	**(115,724)**

ARQ LIMITED
Consolidated Balance Sheet
As at 31 December 2022 and 2021

	Notes	2022 $'000	2021 $'000
Assets			
Non-current assets			
Property, plant and equipment	**11**	44,193	93,392
Other receivables and prepayments	**12**	1,842	2,391
Total non-current assets		**46,035**	**95,783**
Current assets			
Inventory		340	340
Other receivables and prepayments	**12**	1,660	1,637
Cash and cash equivalent	**13**	3,008	7,013
Total current assets		**5,008**	**8,990**
Total assets		**51,043**	**104,773**
Equity and liabilities			
Equity			
Called up share capital	**14**	16,116	15,716
Share premium	**14**	278,249	278,069
Other capital reserve	**14**	100,696	97,366
Retained deficit		(475,727)	(400,296)
Equity attributable to equity shareholders of the company		**(80,666)**	**(9,145)**
Current liabilities			
Trade and other payables	**16**	5,641	7,529
Loans and borrowing	**17**	103,701	84,303
Total current liabilities		**109,342**	**91,832**
Non-current liabilities			
Loans and borrowing	**17**	19,123	17,910
Provisions	**18**	3,244	4,176
Total non-current liabilities		**22,367**	**22,086**
Total liabilities		**131,709**	**113,918**
Total equity and liabilities		**51,043**	**104,773**

The financial statements of Arq Limited on pages 4 to 25 were approved by the Directors and authorised for issue on 4 January 2024. They were signed on its behalf by:

/s/ Julian McIntyre
Julian McIntyre
Director
4 January 2024

ARQ LIMITED
Consolidated Statement of Changes in Equity
For the years ended 31 December 2022 and 2021

	Notes	Called up share capital	Share premium	Other capital reserve	Retained Deficit	Total
		$'000	$'000	$'000	$'000	$'000
As at 1 January 2021		**15,710**	**277,896**	**92,445**	**(284,572)**	**101,479**
Total comprehensive loss for the year		-	-	-	(115,724)	(115,724)
Issuance of shares	**14**	6	173	-	-	179
Share-based compensation	**15**	-	-	4,921	-	4,921
As at 31 December 2021		**15,716**	**278,069**	**97,366**	**(400,296)**	**(9,145)**
Total comprehensive loss for the year		-	-	-	(75,431)	(75,431)
Issuance of shares for services	**14**	239	135	-	-	374
Issuance of shares to extinguish debt	**14**	161	45	-	-	206
Conversion option on loan note	**14**	-	-	919	-	919
Share-based compensation	**15**	-	-	2,411	-	2,411
As at 31 December 2022		**16,116**	**278,249**	**100,696**	**(475,727)**	**(80,666)**

ARQ LIMITED
Consolidated Statement of Cashflows
For the years ended 31 December 2022 and 2021

	Notes	2022 $'000	2021 $'000
Operating Activities			
Loss before tax		(75,873)	(116,639)
Adjustment to reconcile loss before tax to net cash flows			
Share-based payment expense		2,785	5,100
Depreciation of property, plant and equipment		3,911	710
Impairment loss	**6**	44,560	90,070
Finance income		(7)	(50)
Finance cost	**8**	20,136	699
Loss on disposal of fixed assets		-	16
Gain on changes to liabilities and debt	**9**	(11,267)	-
Other income		(131)	-
Working capital adjustments			
Increase in trade and other payables		3,104	2,576
Increase in other receivables and prepayments		965	(795)
Income tax refund		-	689
Net cash outflows from operating activities		(11,817)	(17,624)
Investing activities			
Purchase of property, plant and equipment		(2,480)	(7,109)
Proceeds from the sale of equipment		233	-
Interest received		7	50
Net cash outflows from investing activities		(2,240)	(7,059)
Financing activities			
Proceeds from bank loan	**17**	3,578	6,230
Proceeds from issuance of convertible instrument	**17**	8,200	-
Transaction costs		-	(705)
Repayment of leases	**17**	(1,168)	(1,105)
Interest paid		(558)	(179)
Net cash inflows from financing activities		10,052	4,241
Cash and cash equivalent at 1 January	**13**	7,013	27,455
Net decrease in cash and cash equivalent		(4,005)	(20,442)
Cash and cash equivalent at 31 December	**13**	3,008	7,013

1 Description of the Organisation

Arq Limited ("Company"), is a limited company domiciled in Jersey and incorporated on December 30, 2010 under the Companies (Jersey) Law 1991. The Company and its subsidiaries at 31 December 2022 comprise the Arq Group ("Group"). The registered office is located at Level 1 IFC 1 Esplanade St Helier Jersey JE2 3BX.

The Group uses proprietary and proven technologies to remediate waste land (typically former coal mine sites) and create specialty carbon products, with a broad range of applications, from pollution control to supporting the energy transition. This is achieved by the Group's core business, a novel processing technology which uses coal mining waste as its feedstock. The combination of the Group's technology and facilities enables the production of a micro-fine hydrocarbon powder ("Arq powder") which can be used as a feedstock or as a direct product in large, diverse and global markets.

The end-product, Arq powder, is a substitute for existing carbon or hydrocarbon products, typically produced from petroleum or coal. Given ongoing environmental pressures on these industries, Arq powder is expected to deliver environmental benefit to customers while minimising the impact on operational performance. Potential end-markets for Group's products include two key areas:

- **Materials**: Arq powder can be used to produce activated carbon, carbon filler for carbon black rubber composite, as a component of asphalt, and with a longer-term goal of expanding into other carbon products, such as synthetic graphite.
- **Power and Transportation**: Arq powder can be used as a blending component in residual fuel oil ("RFO") for marine and utility fuels, which are expected to have a lower cost and improved environmental footprint.

2 Summary of Significant accounting policies

a) Basis of preparation

The Group consolidated financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB") and applicable requirements of Jersey law.

The consolidated financial statements have been prepared on a historical cost basis, except where otherwise noted. The consolidated financial statements are presented in US dollars and all values are rounded to the nearest thousand ($'000), except when otherwise indicated.

The Group's consolidated financial statements are prepared on a basis other than going concern. Management has assessed that the accounting policies to be adopted are the same as those of the previous financial year. Property, plant and equipment has been impaired to its recoverable amount, which is the lower of amortised cost and net realizable value. The Company believes this is the best estimate of fair value in accordance with IFRS. See further discussion under b) as to the Group's operations subsequent to 31 December 2022.

b) Going concern

The Group has evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about the Group's ability to continue as a going concern within one year after the date the consolidated financial statements are issued.

The Group is not currently revenue generating and hence from its inception through 31 December 2022, has incurred significant operating losses and has reported negative cash flows from operations. At 31 December 2022, the Group has unrestricted cash of $2.5 million and current liabilities in excess of current assets of $104.3 million.

In August 2022, the Group entered into an agreement with Advanced Emissions Solutions, Inc. ("ADES"), a US listed activated carbon producer, whereby ADES would acquire 100% of the outstanding share capital of the Company in exchange for ADES shares ("merger transaction"). The combination of ADES and the Group (together, "combined group") was to secure an integrated supply chain to produce granular activated carbon ("GAC") using Arq powder that creates significant competitive advantages. The merger transaction was put on hold in December 2022 whilst terms were renegotiated.

Subsequent to the year-end, in January 2023, revised terms were agreed between the Group and ADES. On February 1, 2023, ADES acquired 100% of the outstanding share capital of all of the Company's direct subsidiaries ("Direct Subsidiaries") and substantially all of the Company's assets and liabilities ("ADES Acquisition") in exchange for consideration ("Purchase Consideration") comprised of 3,814,864 shares of ADES's common stock ("ADES Common Shares") and 5,294,462 of ADES's Series A Convertible Preferred Stock ("ADES Preferred Shares").

Immediately prior to the ADES Acquisition, the Company's convertible loan note was converted into 238,218,926 ordinary shares of the Company. All related security and any guarantee provided by the Group were released.

Immediately after the ADES Acquisition, the Company's net assets were comprised of $500,000 of cash and its investment in ADES, comprised of the ADES Common Shares and ADES Preferred Shares, which were valued at the estimated fair value of $31.2 million, based on the estimated fair value of the ADES Common Shares and ADES Preferred Shares. The estimated fair value of the ADES Common Shares was determined by the publicly-traded price of ADES' Common Stock. The estimated fair value of the ADES Preferred Shares was determined by a third party valuation, performed on behalf of the Company and used as the determinate of the Purchase Consideration. Immediately after the ADES Acquisition, the Company had no outstanding liabilities, as all of the Company's and the Direct Subsidiaries' liabilities were assumed by ADES.

Since the ADES Acquisition, ADES has incorporated the Direct Subsidiaries' operations into its own operations and intends to begin producing and selling new products in 2024 utilizing Arq powder as its primary feedstock. As such, the Company believes that the Direct Subsidiaries represent a going concern business and a strategic part of ADES's ongoing operations in the near term and in the future.

On February 17, 2023, the Company bought back 87.9% of its outstanding ordinary shares in exchange for 3,370,865 ADES Common Shares and 4,364,131 ADES Preferred Shares. The Company's plan is to distribute the remaining ADES Common Shares and ADES Preferred Shares and then liquidate within 12 months of approving these financial statements. Based on the intention and plan by Management to liquidate the Company, these financial statements have been prepared on a basis other than going concern. Management has assessed that it is appropriate to continue to apply the recognition and measurement criteria of IFRS.

Of the total ADES Preferred Shares received by the Company in the ADES Acquisition, 833,914 are being held in escrow ("Escrow Shares") pending the determination by the Internal Revenue Service ("IRS") that no tax withholding ("Tax Liability") is required on the Purchase Consideration issued to the Company. The value of the Tax liability was estimated at $3.3 million. In the event that the IRS determines that no withholding is required in connection with the Purchase Consideration received by the Company, all of the Escrow Shares will be released and delivered to the Company. In the event that the IRS determines that any amount of withholding is required, ADES has agreed to redeem a sufficient number of Escrow Shares to fund the required payment to the IRS, and that number of Escrow Shares will be returned to ADES. The number of Escrow Shares to be returned to ADES is equal to the required Tax Liability divided by the Original Issue Amount of $4.00 per ADES Preferred Share, not to exceed a maximum of 833,914 Escrow Shares.

c) Basis of consolidation

The consolidated financial statements comprise the financial statements of the Company and its subsidiaries as of the reporting date each year.

Control is achieved when an investor is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Specifically, the Group controls an investee if, and only if, the Group has:

- Power over the investee.
- Exposure, or rights, to variable returns from its involvement with the investee.
- The ability to use its power over the investee to affect its return.

The Group re-assesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when the Group obtains control over the subsidiary and ceases when the Group loses control of the subsidiary. Assets, liabilities, income and expenses of a subsidiary acquired or disposed of during the year are included in the consolidated income statement and other comprehensive income from the date the Group gains control until the date when the Group cease to control the subsidiary.

Profit or loss and comprehensive income are attributed to the owners of the Group. Total comprehensive income of subsidiaries is attributed to the owners of the Group. All intra-group transactions, balances, income and expenses are eliminated on consolidation.

If the Group ceases to retain control over a subsidiary, it derecognises the related assets, liabilities, and other components of equity, while any resultant gain or loss is recognised in the income statement.

d) Property, plant and equipment

Property, plant and equipment held for use in the production or supply of goods or services, or for administrative purposes, are stated in the consolidated balance sheet at recoverable value determined to be the lower of amortised cost and net realizable value.

Depreciation is charged to write off the cost to their residual values based on the following methods by asset class:

Mineral asset	Unit of production
Plant and equipment	Straight-line over estimated useful lives of 5 to 20 years

The gains and losses arising on the disposal or retirement of an asset is determined as the differences between the sales proceeds and the carrying amount of the asset and is recognised in the consolidated income statement and other comprehensive income.

Work in progress is an asset under construction that has not yet been put into use. The asset is not subject to depreciation while in the construction phase status. Once the asset is fully developed and available for use, depreciation will start accordingly.

The cost of mineral assets includes the present value of the expected cost for the decommissioning of an asset after its use if the recognition criteria for a provision are met (see accounting policy l) plus the excess of the cost of acquisition over the fair value of the identifiable assets and liabilities when acquiring mining assets.

e) Right-of-use assets

Leased right-of-use assets are included within property, plant and equipment, and are recognised on inception of the lease. Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognised, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received. The right-of-use asset is depreciated on a straight-line basis over the term of the lease.

If ownership of the leased asset transfers to the Group at the end of the lease term or the cost reflects the exercise of a purchase option, depreciation is calculated using the estimated useful life of the asset.

f) Impairment of property, plant and equipment

As noted in note 2b, these financial statements are prepared on a basis other than going concern. Management has assessed that the recoverable amount of property, plant & equipment be recognized as the lower of amortised cost and net realizable value.

If the recoverable amount of an asset (or cash-generating unit) ("CGU") is estimated to be less than its carrying amount, the carrying amount of the asset (cash-generating unit) is reduced to its recoverable amount and an impairment loss is recognised as an expense immediately.

g) Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalised as part of the cost of the respective asset. Once the asset is commissioned, interest is no longer capitalised. All other borrowing costs are expensed in the period in which they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

h) Research costs

Research costs are expensed as incurred.

i) Taxes

Current income tax

Current income tax assets and liabilities are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted at the reporting date in the countries where the Group operates and generates taxable income.

Deferred tax

Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes at the reporting date. Deferred tax liabilities are recognised for all taxable temporary differences, except when the deferred tax liability arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss.

Deferred tax assets are recognised to the extent that it is probable that future taxable profit will be available against which the temporary difference can be utilised.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realised or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.

j) Foreign currencies

The Group's consolidated financial statements are presented in US dollars, which is the Group's functional currency. For each subsidiary, the Group determines the functional currency and items included in the financial statements of each entity are measured using that functional currency. The Group uses the direct method of consolidation and on disposal of a foreign operation, the gain or loss that is reclassified to profit or loss reflects the amount that arises from using this method.

Transactions in foreign currencies are initially recorded by the Group's entities at their respective functional currency spot rates at the date the transaction first qualifies for recognition. Monetary assets and liabilities denominated in foreign currencies are translated at the functional currency spot rates of exchange at the reporting date. Differences arising on settlement or translation of monetary items are recognised in the income statement.

k) Share-based payment transactions

The group employees and certain suppliers of research and development and marketing services receive compensation in the form of share-based payment transactions, whereby employees and suppliers render services as consideration for equity instruments (equity-settled transactions). The equity-settled transactions issued to employees are measured at fair value at the date of grant and are expensed on a straight-line basis over the vesting period, based on the Group's estimate of shares that will eventually vest, with a corresponding increase in other capital reserves. For employees, the expense is recognised in salaries and wages. For suppliers, the equity-settled transactions are measured at fair value and expensed at the date the services were provided, and the expense is recognised in the applicable expense category.

The fair value of share options issued with non-market vesting conditions has been calculated using the Black Scholes model. For all other share awards, the fair value is determined by reference to the value of the services at the grant date. For all share schemes with non-market vesting conditions, the likelihood of vesting has been taken into account when determining the relevant charge. Vesting assumptions are reviewed during each reporting period to ensure they reflect current expectations.

When the terms of an equity-settled award are modified, the minimum expense recognised is the grant date fair value of the unmodified award, provided the original vesting terms of the award are met. An additional expense, measured at the date of modification, is recognised for any modification that increases the total fair value of the share-based payment transaction, or is otherwise beneficial to the employee.

Service and non-market performance conditions are not taken into account when determining the grant date fair value of awards, but the likelihood of the conditions being met is assessed as part of the Group's best estimate of the number of equity instruments that will ultimately vest.

l) Provisions

Provisions are recognised when the Group has a present obligation as a result of a past event and it is probable that the Group will be required to settle that obligation. Provisions are measured at the Group's best estimate of the expenditure required to settle the obligation at the reporting date, and are discounted to present value where the effect is material.

The Group records a provision for asset rehabilitation costs for reclaiming surface land, and support facilities at the underground and surface mines in accordance with federal and state reclamation laws as required by each mining permit. Rehabilitation costs are recorded at the present value of expected costs to settle the obligation using estimated cash flows and are recognised as part of the cost of the relevant asset. The cash flows are discounted at the current pre-tax rate that reflects the risks specific to the rehabilitation liability. The unwinding of the discount is expensed in the income statement as a finance cost. The estimated future costs of rehabilitation are reviewed annually and adjusted from the cost of the asset as appropriate.

m) Financial assets

Initial recognition and measurement

The Group's financial assets comprise vendor receivables, deposits, and cash and cash equivalents. At initial recognition, these financial assets are measured at amortised cost. Financial assets at amortised cost are subsequently measured using the effective interest rate method ("EIR") and are subject to impairment. Gains and losses are recognised in the income statement when the asset is derecognised, modified or impaired.

Derecognition

Financial assets are derecognised only when the rights to receive cash flows from the assets have expired, or the Group has transferred its rights to receive cash flows from the asset.

Impairment of financial assets

The Group recognises an allowance for expected credit losses (ECLs) for all receivables and deposits. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. ECLs are recognised in two stages. For credit losses for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12months (a 12-month ECL). For those credit losses for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

The Group considers a financial asset in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group. A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

n) Financial liabilities

The Group's financial liabilities include trade payables, accrued trade and payroll expenses, lease liabilities, York preferred units and bank loans. All financial liabilities are recognised initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs. For more information on the York preferred units, bank loan, and the lease liabilities see note 2o, note 2s, and note 16.

After initial recognition, trade payables and interest-bearing loans and borrowings are subsequently measured at amortised cost. The EIR method is used to calculate the amortization of interest-bearing loans and borrowings. Amortised cost is calculated based on any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortisation is included as finance costs in the income statement.

A financial liability is derecognised when the obligation under the liability is discharged or cancelled or expires.

o) Borrowing

On issuance of a borrowing, the fair value of the liability component is determined using a market rate for an equivalent non-convertible instrument. This amount is classified as a financial liability measured at amortised cost (net of transaction costs) until it is extinguished on conversion or redemption.

Shares and warrants issued in conjunction with a borrowing are recognised in equity. Transaction costs are allocated between financial liabilities and equity based on the relative fair value of the shares, warrants, and preferred units.

A change in the terms of a borrowing is accounted for as an extinguishment when it results in a significant change in fair value. Any gain or loss from this extinguishment is recognised in the income statement as other income or expense.

Conversion features in a borrowing that result in a variable number of shares issued are treated as derivative financial instruments in financial liabilities and initially recognized at fair value. The derivative financial liabilities are classified as held for trading.

Conversion features in a borrowing that result in a fixed number of shares issued are treated as equity instruments and are valued as the residual of the proceeds after deducting the fair value of the liability component.

The modifications of the terms of a convertible feature from a variable conversion price to a fixed conversion price results in the extinguishment of the borrowing if there is a change greater than 10% in the fair value of the borrowing based on the change in the conversion price. Any gain or loss from this extinguishment is recognized in the income statement as other income or expense.

p) Cash and cash equivalents

Cash and short-term deposits in the balance sheet comprise cash at banks and on hand and short-term deposits, net of overdraft, with an original maturity of three months or less, which are subject to an insignificant risk of changes in value.

q) Inventory

Inventory is measured at the lower of cost and net realisable value. Inventory relates to the cost of purchasing raw material used in the production of Arq powder.

r) Prepayments

Prepayments comprise services that have been paid for in advance. The balance is expensed when the service has been delivered.

s) Lease liabilities

Lease liabilities recognised on the balance sheet are recognised within borrowings. Upon inception, the lease liability is recognised as the present value of the expected future lease payments, calculated using the Group's incremental borrowing rate, adjusted to reflect the length of the lease and country of location. The lease liability is measured at amortised cost using the Company's incremental borrowing rate. and is remeasured when there is a change to the forecasted lease payments. When the lease liability is remeasured, an adjustment is made to the corresponding right-of-use asset.

t) Short-term leases and leases of low-value assets

The Group applies the short-term lease recognition exemption to its short-term leases of machinery and equipment (i.e., those leases that have a lease term of 12 months or less from the commencement date). It also applies the lease of low-value assets recognition exemption to leases of office equipment that are considered to be low-value. Lease payments on short term leases and leases of low-value assets are recognised as expense on a straight-line basis over the lease term.

u) New and amended standards and interpretations

There were no amended standards and interpretations which come into effect in the period that had significant impact on the Group's consolidated financial statements.

v) Standards issued but not yet effective
Definition of Accounting Estimates - Amendments to IAS 8

In February 2022, the IASB issued amendments to IAS 8, in which it introduces a definition of 'accounting estimates'. The amendments clarify the distinction between changes in accounting estimates and changes in accounting policies and the correction of errors. The amendments are effective for annual reporting periods beginning on or after 1 January 2023 and apply to changes in accounting policies and changes in accounting estimates that occur on or after the start of that period. The amendments are not expected to have a material impact on the Group.

Disclosure of Accounting Policies - Amendments to IAS 1 and IFRS Practice Statement 2

In February 2022, the IASB issued amendments to IAS 1 and IFRS Practice Statement 2 Making Materiality Judgements, in which it provides guidance and examples to help entities apply materiality judgements to accounting policy disclosures. The amendments aim to help entities provide accounting policy disclosures that are more useful by replacing the requirement for entities to disclose their 'significant' accounting policies with a requirement to disclose their 'material' accounting policies and adding guidance on how entities apply the concept of materiality in making decisions about accounting policy disclosures. The amendments to IAS 1 are applicable for annual periods beginning on or after 1 January 2023. The Group is currently assessing the impact of the amendments to determine the impact they will have on the Group's accounting policy disclosures.

Clarification on classification of liabilities as current or non-current – Clarifies IAS 1

In July 2020, the IASB clarified a criterion in IAS 1 *Presentation of Financial Statements* for classifying a liability as non-current, in which the requirement for an entity to have the right to defer settlement of the liability for at least 12 months after the reporting period. The clarification to IAS 1 is applicable for annual periods beginning on or after 1 January 2023. The amendments are not expected to have a material impact on the Group.

3 Significant accounting judgements, estimates and assumptions

The preparation of the Group's consolidated financial statements requires management to make judgements, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the accompanying disclosures, and the disclosure of contingent liabilities. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of asset or liability affected in future periods.

a) Judgements

Lease liabilities

The Group determines the lease term as the non-cancellable term of the lease, together with any periods covered by an option to extend the lease if it is reasonably certain to be exercised. For the leasing of land at Corbin, Kentucky, the Group has the option to extend the lease beyond 2025 and therefore management applies judgement in evaluating whether the lease will be renewed and has assumed it will be extended for a further 15 years based on the Group's business plan.

b) Estimates and assumptions

Rehabilitation provision

The Group has recognised a provision for rehabilitation obligations associated with assets at two sites relating to coal-based feedstock. In determining the fair value of the provision, estimates are made in relation to discount rates, the expected cost to dismantle and remove the plant from the site and the expected timing of those costs. The Group estimates that the costs would be realised in the next 4 years at one site, and 22 years at another site. The provision is calculated using a discounted cashflow method. The carrying amount of the provision as at 31 December 2022 and 2021 was $3.4 million and $4.2 million, respectively.

Impairment of property, plant and equipment

As noted in note 2b, financial statements are prepared on a basis other than going concern, and management has assessed that the recoverable amount of property, plant & equipment be recognized as the lower of amortised cost and net realizable value, which the Company believes represents the best estimate of fair value. The recoverable amount as at 31 December 2022 was determined based on the recoverable amount of $44.5 million as estimated at the date of the ADES Acquisition, and adjusted for capital expenditure and depreciation recorded for the month of January 2023. The Group determined the recoverable amount primarily based on a third party valuation performed on behalf of ADES and used in the recording of the assets acquired and liabilities assumed in the ADES Acquisition.. As a result, for the year ended 31 December 2022, the Group recognised an impairment of certain property, plant and equipment totaling $44.6 million.

Share-based payments and warrants

The Group estimates the number of options that are likely to vest in regard to the performance criteria included in the Group's management incentive plan.

The Group uses the Black-Scholes model in determining the fair value of options granted to employees under the Group's share schemes and warrants issued to investors. The determination of the fair value of options and warrants requires a number of assumptions. The alteration of these assumptions may impact charges to the income statement over the vesting period of the award and the total amount allocated to equity. Details of the assumptions for share-based payments and performance criteria are disclosed in note 14.

Fair value of loans and borrowings

The Group uses risk adjusted discount rates to calculate the fair value of loans and borrowing. The discount rates are taken from observable markets where possible, but where this is not feasible, a degree of judgement is required to establish the discount rate such as liquidity and credit risk. During the year ended 31 December 2022, a discount rate of 21.5% (2021: 21.5%) was used to calculate the fair value of the York preferred units and 86.0% for the convertible loan note (see note 17).

Leases - Estimating the incremental borrowing rate

In circumstances where the Group cannot readily determine the interest rate implicit in the lease, the incremental borrowing rate (IBR) is used to measure lease liabilities. The IBR is the rate of interest that the Group would have to pay to borrow over a similar term, and with a similar security, the funds necessary to obtain an asset of a similar value to the right-of-use asset in a similar economic environment.). The Group estimates the IBR using observable inputs (such as market interest rates) when available.

4 Adjusted EBITDA

Adjusted EBITDA is calculated by adding back depreciation of property, plant and equipment, impairment loss and share-based compensation from operating loss included in the consolidated income statement and other comprehensive income.

Directors prepare adjusted EBITDA in order to assist with comparability between peers and to give what they consider to be a better indication of the underlying business.

	2022	**2021**
	$'000	**$'000**
Operating loss	(67,215)	(115,969)
Depreciation	3,911	710
Impairment loss	44,560	90,070
Share- based compensation	2,785	5,100
Adjusted EBITDA	(15,959)	(20,089)

In the year ended 31 December 2022, the Group recognised an impairment loss of $44.6 million (2021: $90.1 million).

In the year ended 31 December 2022, share-based compensation includes $374,000 relating to shares issued to external suppliers (2021: $179,000).

5 Salaries and benefits

A breakdown of salaries and benefits for the Group during the year is as follows:

	2022	**2021**
	$'000	**$'000**
Included in plant operating expenses		
Wages and salaries	579	476
Other employee based costs	90	81
Included in research and development expenses		
Wages and salaries	582	681
Other employee based costs	44	46
Included in administration expenses		
Wages and salaries	4,823	4,734
Other employee based costs	908	922
Share-based compensation	2,411	4,921
	9,437	11,861

6 Plant operating expenses

A breakdown of plant operating expenses for the Group during the year is as follows:

	2022	2021
	$'000	$'000
Wages and salaries and other employee benefits	669	557
Contractors	595	1,922
Utility expenses	784	2,044
Impairment	44,560	90,070
Depreciation	3,637	-
Other operating expenses	1,071	1,579
	51,316	96,172

7 Administration expenses

A breakdown of administration expenses for the Group during the year is as follows:

	2022	2021
	$'000	$'000
Wages and salaries and other employee benefits	5,731	5,656
Employee and contractor share-based payment expense (note 14)	2,411	4,921
Business development and marketing fee	1,192	2,318
Professional fees	3,110	1,406
Other administrative expenses	1,640	1,493
	14,084	15,794

In year ended 31 December 2022, business development and marketing fee includes an accrued product marketing fees of $1.0 million (2021: $2.0 million) charged by Vitol S.A. ("Vitol").

8 Finance expenses

	2022	2021
	$'000	$'000
Interest on debts and borrowing	20,091	546
Revaluation of provision	-	87
Unwinding of discount on provisions	45	66
	20,136	699

In the year ended 31 December 2022, the Group interest on debt and borrowings of $20.0 million (2021: $15.4 million), of which $nil million (2021 : $14.9 million) was capitalised in property, plant and equipment as part of the construction of the Corbin and St Rose facilities.

9 Gain on changes to liabilities and debt

	2022	2021
	$'000	$'000
Gain on modification of York preferred units (1)	5,775	-
Gain on extinguishment of convertible loan notes (2)	699	
Gain on extinguishment of liability (3)	4,793	-
	11,267	-

(1) In August 2022, the Group agreed with York that upon completion of the ADES Acquisition, the York preferred units plus any accrued interest will be converted into 32,020,535 ordinary shares. The modification of the terms resulted in a change of less than 10% in the fair value of the debt based on the conversion occurring in March 2023. As a result, the carrying value of the outstanding debt was adjusted with a gain on modification of $5.8 million.

(2) In August 2022, the Group received $6.9 million in exchange for secured convertible loan notes from certain initial subscribers. The terms are set in note 17. The conversion feature included in the loan note resulted in a variable conversion price as there was an option to increase the convertible loan notes up to $8.2 million for a fixed number of shares when the convertible loan

notes was offered to all of the Company's shareholders on a pro-rata basis. In October 2022, after offering the convertible loan notes to all of the Company's shareholders on a pro-rata basis , the price used for converting the convertible loan notes into Company's ordinary shares was fixed. The modification of the terms from a variable conversion price to a fixed conversion price resulted in the extinguishment of the debt as there was a change greater than 10% in the fair value of the debt based on the change in conversion price. As a result, the carrying value of the outstanding debt was adjusted with a gain on extinguishment of $0.7 million.

(3) In August 2022, the Group agreed to fully settle an outstanding debt relating to accrued marketing fees totaling $5.0 million owed to Vitol, a supplier and shareholder of the Company, into 1,612,903 ordinary shares which had a fair value of $0.2 million. The fair value was determined based on the ADES Acquisition. As a result, the Group made a gain on extinguishment of liability of $4.8 million.

10 Taxation

The charge for the year can be reconciled to the loss before tax per the income statement and other comprehensive income as follows:

	2022	**2021**
	$'000	**$'000**
Current tax	442	882
Adjustments in respect of current income tax of previous year	-	33
	442	915

	2021	**2021**
	$'000	**$'000**
Reconciliation of tax expense and the accounting profit at domestic tax rate		
Loss before tax	(75,873)	(116,639)
Taxation at domestic rate for foreign subsidiaries	(17,920)	(28,476)
Tax effect of:		-
Non-deductible expenses for tax purposes	485	694
Timing differences not recognised as deferred tax asset	17,090	26,261
Tax losses not recognised as deferred tax asset	345	1,521
R&D credit	442	882
Prior year R&D credit	-	33
	442	915

Profits arising in the Company are subject to Jersey income tax at the standard corporate income tax rate of 0%. Subsidiaries of the Group are subject to standard corporation rates ranging from 19% to 26.5%. No components of income tax affect other comprehensive income.

The Group has tax losses that arose in the US of approximately $40.7 million (2021: $37.0 million). These cumulative losses consist of $21.8 million which are expected to expire in years ranging from 2030 to 2033. Tax losses in the US of $19.2 million (2021: $15.2 million) generated since 2018 can be carried forward indefinitely under the provision of new tax legislation. The Group has further tax losses in the UK of approximately $11.7 million (2021: $10.0 million) that are available indefinitely. Deferred tax assets of $13.8 million (2021: $12.3 million) have not been capitalized in respect of these losses due to the startup nature of the Group. The Group will reevaluate whether a deferred tax asset should be capitalized once the business nears profitability.

11 Property, plant and equipment

	Mineral assets	Plant & equipment	Land and Buildings	Plant & Equipment – Right of use	Land & Building – Right of use	Work in progress	Total
	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Cost							
At 1 January 2021	**2,960**	**491**	**-**	**807**	**5,721**	**144,550**	**154,529**
Additions	-	136	-	6,820	696	21,659	29,311
Disposal	-	(74)	-	-	-	-	(74)
Transfer	-	71,663	70,184	-	-	(141,847)	-
Amendment to right of use	-	-	-	-	432	-	432
Change in rehabilitation provision	8	-	-	-	-	-	8
At 31 December 2021	**2,968**	**72,216**	**70,184**	**7,627**	**6,849**	**24,362**	**184,206**
Additions	-	15	-	3	-	2,471	2,489
Disposal	-	-	-	(2,515)	(185)	-	(2,700)
Change in rehabilitation provision	(977)	-	-	-	-	-	(977)
At 31 December 2022	**1,991**	**72,231**	**70,184**	**5,115**	**6,664**	**26,832**	**183,018**
Accumulated depreciation							
At 1 January 2021	**-**	**220**	**-**	**60**	**527**	**-**	**807**
Depreciation charge	-	81	-	434	481	-	996
Impairment of asset	-	37,307	36,052	-	-	15,711	89,070
Disposal	-	(59)	-	-	-	-	628
At 31 December 2021	**-**	**37,549**	**36,052**	**494**	**1,008**	**15,711**	**90,814**
Depreciation charge	-	1,599	1,142	708	462	-	3,911
Impairment of asset	-	15,991	15,761	3,879	2,251	6,678	44,560
Disposal	-	-	-	(275)	(185)	-	(460)
At 31 December 2022	**-**	**55,139**	**52,955**	**4,806**	**3,536**	**22,389**	**138,825**
Net book value							
At 31 December 2022	**1,991**	**17,092**	**17,229**	**309**	**3,128**	**4,444**	**44,193**
At 31 December 2021	**2,968**	**34,667**	**34,132**	**7,133**	**5,841**	**8,651**	**93,392**

The Group started the construction of its new processing facility in Corbin, Kentucky in March 2016, which was commissioned as at 31 December 2021. The construction of the Corbin processing facility and St Rose drying and blending facility were financed using a combination of third party borrowing and equity. The amount of borrowing costs capitalised during the year ended 31 December 2022 was $nil million (2021: $14.9 million). The rate used to determine the amount of borrowing costs eligible for capitalisation in the year ended 31 December 2022 was nil% (2021: 19.7%). The carrying amount of the Corbin processing facility at 31 December 2022 was $41.6 million (2021: $92.3 million), and the primary change year over year was impairment recorded as at 31 December 2022. The Group recorded impairment as at 31 December 2022 primarily based on a valuation performed by a third party on behalf of ADES and used in the recording of the assets acquired and liabilities assumed in the ADES Acquisition as of February 1, 2023

Depreciation charge for the year ended 31 December 2022 of $3.9 million (2021: $1.0 million) includes depreciation expensed in the income statement of $3.9 million (2021: $0.7 million) and depreciation of $nil million (2021: $0.3 million) relating to the Corbin right of use lease was capitalised in work in progress.

Mineral assets include rehabilitation costs at the Corbin facility. The balance will be depreciated once production at its Corbin facility commences.

12 Other receivables

	2022 $'000	2021 $'000
Due within 1 year		
Prepayments	257	658
Other receivables	1,403	979
	1,660	1,637
Due after 1 year		
Deposit	1,842	2,391
	1,842	2,391

Deposits due after 1 year includes vendor deposits and surety bonds in regard to regulatory reclamation requirements on certain mining assets held by the Group.

13 Cash and cash equivalents

	2022 $'000	2021 $'000
Cash at bank and on hand	3,008	7,013
	3,008	7,013

At 31 December 2022, the Group held cash of $0.5 million (2021: $1.0 million) which is restricted to payment of interest on its loan facility. Interest on the loan facility is deducted from this bank account. (See note 17).

14 Called up share capital and share premium

Number of authorised shares	2022 Thousands	2021 Thousands
Ordinary shares of $0.10 each	800,000	200,000
Ordinary shares of $0.001 each	6,000	6,000
Series B preferred shares of $0.10 each	150,000	150,000
Series C preferred shares of $0.01 each	350,000	350,000
	1,306,000	706,000

Preferred shares rank ahead of ordinary shares in event of liquidation and payment of dividends.

Movement in capital	Ordinary shares	Series B preferred shares	Called up share capital	Share Premium	Capital Reserve
	Thousand	Thousand	$'000	$'000	$'000
At 1 January 2021	**78,374**	**78,731**	**15,710**	**277,896**	**92,445**
Issuance of shares	58	-	6	173	-
Share-based compensation	-	-	-	-	4,921
At 31 December 2021	**78,432**	**78,731**	**15,716**	**278,069**	**97,366**
Issuance of shares for services	2,385	-	239	135	-
Issuance of shares to extinguish debt	1,613	-	161	45	-
Conversion of Series B preferred shares to ordinary shares	78,731	(78,731)	-	-	-
Conversion option on convertible loan notes	-	-	-	-	919
Share-based compensation	-	-	-	-	2,411
At 31 December 2022	**161,161**	**-**	**16,116**	**278,249**	**100,696**

The capital reserve includes the fair value of vested equity-settled share options and the fair value of equity settled warrants that have not been exercised. The reserve will be adjusted for the Group's best estimate of whether the warrants and options will ultimately vest based on non-market performance conditions.

Equity-settled warrants

Each equity-settled warrant converts into one ordinary share of the Company on exercise. All unexpired warrants were cancelled during 31 December 2022.

	Ordinary share warrants	Weighted average exercise price
	Thousand	$
At 1 January 2021	**22,329**	3.51
Expired	(15,755)	4.45
At 31 December 2021	**6,574**	**1.26**
Expired	(2,638)	0.77
Cancelled	(3,936)	1.59
At 31 December 2022	-	-

15 Shared-based payments

Equity-settled share option scheme

The Group introduced a share option programme in 2015 to grant share options as an incentive for directors, employees and suppliers of the Group. Each share option converts into one ordinary share of the Company on exercise. No amounts are paid or payable by the recipient on receipt of the option and the Group has no legal obligation to repurchase or settle the options in cash. The options carry neither rights to dividends nor voting rights prior to the date on which the options are exercised. Options may be exercised at any time from the date of vesting to the date of expiry. During the year ended 31 December 2020, the Group introduced a management incentive scheme whereby vesting of options is in accordance with the achievement of certain performance conditions with 5% of options vesting based on the commissioning of Corbin and St Rose, 5% vesting based on the Company entering into a fixed priced contract for St Rose construction and commissioning, a further 40% vesting based on meeting certain sales and production targets, and the remaining 50% vesting based on financing and designing of a second plant meeting certain production criteria. In the year ended 31 December 2021, as a result of terminating the construction of the St Rose drying and blending facility, the Group adjusted its estimate of the number of options issued in the management incentive scheme that will ultimately vest.

In July 2018, as part of entering into a marketing agreement with Vitol, the Company issued an option to acquire 18,656,716 ordinary shares with an exercise price of $0.80 per share (amended to options over 1,865,672 ordinary shares at an exercise price of $4.63 per share following the 10:1 share consolidation and rights issue in 2019). The option will vest if Vitol sells more than 75% of production from the Corbin Plant during the first 180 days of commercial production. The Company issued a second option to acquire 18,656,716 ordinary shares with an exercise price of $2.00 per share (amended to options over 1,865,672 ordinary shares at an exercise price of $11.57 per share following the 10:1 share consolidation and rights issue in 2019). The option will vest if Vitol sells more than 2 million tonnes of Arq Fuel. Both sets of options have a one year term from the vesting date. Both options were cancelled in August 2022.

See note 24 for changes in the terms of the share option scheme subsequent to 31 December 2022.

Movements in the number of share options outstanding and their related weighted average exercise prices are as follows:

	Employee incentive options	Weighted average exercise price	Other incentive options	Weighted average exercise price
	Thousand	**$**	**Thousand**	**$**
At 1 January 2021	**25,417**	**1.00**	**3,731**	**8.10**
At 31 December 2021	**25,417**	**1.00**	**3,731**	**8.10**
Cancelled	-	-	(3,731)	8.10
Additions	313	-	-	-
Expired	(12,373)	1.64	-	-
At 31 December 2022	**13,357**	**0.39**	**-**	**-**

The number of options exercisable as at 31 December 2022 was 3,172,000 (2021: 15,206,000).

The weighted average remaining contractual life for the share options outstanding as at 31 December 2022 was 6.54 years (2021: 4.20 years).

The weighted average fair value of options granted in 2022 was $0.26 per option. No options were granted in the year ended 31 December 2021.

The range of exercise prices for options outstanding at the end of the year was $0.00 to $4.63 (2021: $0.00 to $11.43).

The following tables list the inputs using the Black Scholes model for the share option for the years ended 31 December 2022 and 2021.

	2022	**2021**
Weighted average fair values at the measurement date for options granted:		
Dividend yield (%)	0%	0%
Expected volatility (%)	93%	93%
Risk–free interest rate (%)	3.87%	1.56%
Expected life of share options (years)	3.06 years	3.06 years
Weighted average price of ordinary shares ($)	$0.26	$2.06

Expected volatility and expected life used in the model has been adjusted, based on management’s best estimate, for the effects of non-transferability, exercise restrictions and behavioural considerations.

16 Trade and other payables

	2022	**2021**
	$’000	**$’000**
Trade payables	3,259	6,279
Accruals	2,382	1,250
	5,641	7,529

17 Long-term borrowing

	2022	2021
	$'000	$'000
Due within 1 year		
York preferred units	94,547	82,881
Convertible loan notes	8,075	-
Bank loan	692	-
Lease liability	387	1,422
	103,701	84,303
Due after 1 year		
Bank loan	8,642	5,721
Lease liability	10,482	12,189
Long term borrowing	19,124	17,910

The table below summarises changes in borrowing:

	York preferred units	Lease liability	Bank loan	Convertible loan note	Total
	$'000	$'000	$'000	$'000	$'000
As of 1 January 2021	**68,205**	**6,219**	**-**	**-**	**74,424**
Cashflows	-	(1,105)	6,230	-	5,125
Additions	-	7,516	-	-	7,516
Accrued finance costs	14,676	549	-	-	15,225
Non cash movements	-	432	-	-	432
Financing costs	-	-	(509)	-	(509)
As of 31 December 2021	**82,881**	**13,611**	**5,721**	**-**	**102,213**
Cashflows	-	(1,168)	3,578	8,200	10,610
Disposal	-	(2,210)			(2,210)
Accrued finance costs	17,441	610	-	1,492	19,543
Non cash movements	(5,775)	26	35	(1,617)	(7,331)
As of 31 December 2022	**94,547**	**10,869**	**9,334**	**8,075**	**122,825**

York preferred units

York entered into an agreement with the Group to become a preferred unit holder of Arq Project in 2015. The preferred units do not have voting rights and rank ahead of the common and ordinary shares of Arq Project.

The preferred units accrue interest of 15% per annum on the aggregate amount outstanding and have a maturity date of September 2022. The outstanding amount of principal and interest can be converted at any time into Series B preferred shares of the Company at a conversion price of $3.10 per share.

In August 2022, the Group and York agreed with York that, subject to the completion of the merger transaction, the York preferred units plus any accrued interest would convert into 32,020,535 ordinary shares. The modification of the terms resulted in the adjustment of the carrying value of the outstanding debt with a gain on modification of $5.8 million (see note 9).

See note 24 for changes in the terms of the preferred units subsequent to 31 December 2022.

Lease liability

The Group has lease contracts for various items of mobile equipment, offices, rail cars and land used in its operations. Leases of mobile equipment, rail cars and offices generally have lease terms between 3 and 8 years. The Group also has a 10 year lease contract for land at its Corbin plant which includes an option to extend the lease. This allows the Group to use the land to extract the coal waste and build its plant facilities at Corbin to meet its overall business objectives. In February 2022, part of the rail car lease was disposed resulting in a reduction in the lease liability of $2.1 million and associated right of use asset of $2.0 million.

Bank loan

In January 2021, the Group entered into a loan facility agreement with Community Bank Trust Inc., partly guaranteed by the US Department of Agriculture, whereby the Group can borrow up to $10.0 million up to January 2023 to invest in its demonstration plant and mini drying and blending facility at Corbin, Kentucky. The loan facility is secured on the property, plant and equipment at Corbin. The loan facility interest rate is the higher of 6% and US Prime Rate + 2.75%. Loan repayments will start at the beginning of the third year, with the loan facility being fully repaid by January 2036. At 31 December 2022, the Group has drawn down $9.8 million (2021: $6.2 million) of the loan facility. The Group's cash and cash equivalent includes $0.5 million (2021: $1.0 million) which is restricted to paying interest on the loan facility up to January 2023.

Convertible loan notes

In August 2022, the Group received $6.9 million in exchange for secured convertible loan notes, which were convertible into the Company's ordinary shares, from certain initial subscribers, with the option to increase to up to $8.2 million, which occurred in October 2022 when the convertible loan notes were offered to all of the Company's shareholders on a pro-rata basis. The convertible loan notes were convertible into a fixed number of ordinary shares of the Company irrespective of how much the Group raised. If the convertible loan note holder subscribed for their pro-rata share of a $20 million private investment into the new combined group of ADES and the Group, the convertible loan note conversion price was c. 2.9 – 3.4 US cents per ordinary share (depending on the total funds raised under the convertible loan notes). If the convertible loan note holder did not subscribe to this further investment, the convertible loan note conversion price was c. 20.8 US cents per ordinary share. The convertible loan notes were secured by a debenture granting security to the convertible loan notes via fixed and floating charges over the assets of the Company and Arq IP Limited.

If the ADES Acquisition was not consummated, the convertible loan notes were redeemable by the Group plus a redemption premium of 15% at the earliest of the first anniversary of the convertible notes, the termination date of the ADES Acquisition agreement or a breach of the ADES Acquisition agreement. As noted in note 2b above, on February 1, 2023, the Company and ADES completed the ADES Acquisition and immediately prior to the ADES Acquisition all of the convertible loan notes were converted into the Company's ordinary shares.

Initially the conversion feature included in the convertible loan notes resulted in a variable conversion price which was treated as a derivative financial instrument and initially recognised at fair value. Upon funding and recognition of the convertible loan notes, the Group recognized derivative liabilities of $2.9 million. The corresponding debt portion was included in current portion of long term borrowing. In October 2022, after offering the convertible loan notes to all of the Company's shareholders on a pro-rata basis , the conversion price was fixed. The modification of the conversion terms resulted in an adjustment to the carrying value of the outstanding convertible loan notes and a gain on extinguishment of $0.7 million was recognized (see note 9). The difference between the fair value of the convertible loan notes and the proceeds received was recognised in the capital reserve as a conversion option totaling $2.0 million (see note 14).

See note 24 for changes in the terms of the preferred units subsequent to 31 December 2022.

18 Provisions

	$'000	$'000
As at 1 January	**4,176**	**4,015**
Interest	66	66
Change in rehabilitation provision	(998)	95
As at 31 December	**3,244**	**4,176**

The Group has an obligation to undertake rehabilitation work when disturbance is caused by the development or ongoing production of a mining property.

The discount rate used in the calculation of the asset rehabilitation provision as at 31 December 2022 equaled 4.15% (2021: 1.3%).

19 Related party transactions

During the year ended 31 December 2022, the Group was charged rent and other office expenses at cost totaling $4,000 (2021: $98,000), by companies controlled by key management. At 31 December 2022, $1,000 (2021: $1,000) was owed to companies controlled by key management.

The remuneration of the directors and the executive leadership team during the year is as follows:

	2022	**2021**
	$'000	**$'000**
Wages and salaries	2,653	2,676
Share-based payment expense	2,279	4,658
	4,932	7,334

As a principal with York is a member of the Group's Board, York is deemed to be a related party. Details of all related party transactions with York, a significant shareholder of the Company, are set out in Note 17 and 24.

20 Commitments

At 31 December 2022, the Group had capital commitments relating to the construction of Corbin facility of $0.7 million (2021: $1.3 million).

21 Financial instruments

The Group's financial instruments comprise cash balances, receivables and payables that arise directly from its operations and borrowings. The table below sets out the carrying value of all financial instruments by category. The fair value of all financial assets and financial liabilities is not materially different to the book value.

	2021	2021
	$'000	$'000
Financial assets		
Receivables	3,245	3,370
Cash and cash equivalent	3,008	7,013
	6,253	10,383
Financial liabilities		
Trade and other payables		
Loans and borrowings	5,641	7,529
	122,824	102,213
	128,465	109,742

The main risks the Group faces are foreign exchange risk, liquidity risk and capital risk. The board regularly reviews and agrees policies for managing each of these risks. The Group's policies for managing these risks are summarised below and have been applied throughout the period.

Foreign exchange risk

As a Group with an office based in the UK and the US, the Group is exposed to foreign exchange risk as a result of operating expenses incurred in GBP. A strengthening of the US dollar against the GBP has a positive effect on the Group's earnings. The Group's policy is not to hedge such exposure.

Liquidity risk

Liquidity risk arises from the management of working capital, finance charges and principal repayments on its debt instruments.

Management's policy is to ensure that it will always have sufficient cash to allow it to meet its liabilities when they become due. Management also prepares 12 month cash flow projections as well as information regarding cash balances on a weekly basis.

The table below summarises the maturity profile of the Group's financial liabilities based on contractual undiscounted payments:

For the year ended 31 December 2022

	Less than 3 months	3 to 12 months	Between 1 and 5 years	Greater than 5 years
	$'000	$'000	$'000	$'000
Trade and other payables	5,319	322	-	-
Loans and borrowing	385	108,769	7,374	8,534
	5,704	109,091	7,374	8,534

For the year ended 31 December 2021

	Less than 3 months	3 to 12 months	Between 1 and 5 years	Greater than 5 years
	$'000	$'000	$'000	$'000
Trade and other payables	5,040	2,489	-	-
Loans and borrowing	469	87,118	8,587	6,297
	5,509	89,607	8,587	6,297

Capital risk

The group's objectives when managing capital are to safeguard the ability to continue as a going concern in order to provide returns for shareholders and benefits to other stakeholders and to maintain an optimal capital structure to reduce the cost of capital. The Group manages its capital structure and makes adjustments in light of changes in economic conditions and the requirements of the business to deliver its business plan. To maintain or adjust the capital structure, the Group may issue new shares or draw on other project finance.

22 Ultimate Controlling Party

In the opinion of the Directors, the Group does not have a single ultimate controlling party.

23 Subsidiaries

The Group consolidated financial statements include the following subsidiaries:

			Equity Interest	
Name	**Country of incorporation**	**Principal activities**	**2022**	**2021**
Arq IP Limited	United Kingdom	Dormant	100%	100%
Arq Coal Technologies LLC	United States of America	Energy Technology	100%	100%
Arq UK Management Limited	United Kingdom	Energy Technology	100%	100%
Arq International Limited	United Kingdom	Dormant	100%	100%
Arq Project Holdings Company LLC	United States of America	Financing Company	100%	100%
Arq Fuel LLC	United States of America	Dormant	100%	100%
Arq Corbin Land LLC	United States of America	Energy Technology	100%	100%
Arq Corbin LLC	United States of America	Energy Technology	100%	100%
Corbin Project LLC	United States of America	Energy Technology	100%	100%
Wharncliffe Asset Management LLC	United States of America	Dormant	100%	100%
Glen Alum Management LLC	United States of America	Dormant	100%	100%
Mine Four LLC	United States of America	Dormant	100%	100%
Arq Series B LLC	United States of America	Financing Company	100%	100%
Arq St Rose LLC	United States of America	Energy Technology	100%	100%

24 Post Balance Sheet Events

As described in note 2b above, on February 1, 2023, the Company and ADES completed the ADES Acquisition, in which ADES acquired 100% of the outstanding share capital of all of the Company's direct subsidiaries and substantially all of the Company's assets and liabilities in exchange for 3,814,864 shares of ADES's common stock ("ADES Common Shares") and 5,294,462 of ADES's Series A Convertible Preferred Stock ("ADES Preferred Shares"). The value of the ADES Common Shares and ADES Preferred Shares was approximately $31.2 million ("Purchase Consideration")

Immediately prior to the ADES Acquisition, the Company executed the following transactions:

- The Company's convertible loan note was converted into 238,218,926 ordinary shares of the Company. Upon completion of the conversion, all related security and any guarantee provided by the Group was released.
- York preferred units plus any accrued interest were converted into 32,020,535 ordinary shares of the Company. Upon the conversion, all related security and any guarantee provided by the Group was released.
- All share options and warrants issued to York and Vitol SA were cancelled. The Company cancelled 3,731,344 equity- settled share options and 3,936,382 warrants.
- All share options that were out of the money or if the performance criteria had not been met were cancelled.
- 1,725,922 share options there were in the money and the performance criteria had been met were exercised
- The Company contributed certain assets, liabilities and contracts to its direct subsidiaries Arq UK Management Limited and Arq LLC., which ADES acquired or assumed in the ADES Acquisition.
- The Company agreed to issue 2,250,000 ordinary shares to Community SPV GP LP for providing transactional advice.

In addition to the ADES Common Shares and ADES Preferred Shares, immediately after the ADES Acquisition, the Company held $500,000 of cash and had no trade or other liabilities. Further, 833,914 ADES Preferred Shares are being held in escrow ("Escrow Shares") pending the determination by the Internal Revenue Service ("IRS") that no tax withholding ("Tax Liability") is required on the Purchase Consideration issued to the Company. The value of the Tax liability was estimated at $3.3 million. In the event that the IRS determines that no withholding is required in connection with the Purchase Consideration received by the Company, all of the Escrow Shares will be released and delivered to the Company. In the event that the IRS determines that any amount of withholding is required, ADES has agreed to redeem a sufficient number of Escrow Shares to fund the required payment to the IRS, and that number of Escrow Shares will be returned to ADES. The number of Escrow Shares to be returned to ADES is equal to the required Tax Liability divided by the Original Issue Amount of $4.00 per ADES Preferred Share, not to exceed a maximum of 833,914 Escrow Shares.

On February 17, 2023, the company repurchased 87.9% of its outstanding ordinary shares in exchange for 3,370,865 ADES Common Shares and 4,364,131 ADES Preferred Shares.

The Company's plan is to distribute the remaining ADES Common Shares and ADES Preferred Shares and then liquidate within 12 months of approving these financial statements. Based on the intention and plan by Management to liquidate the Company, these financial statements have been prepared on a basis other than going concern. Management has assessed that it is appropriate to continue to apply the recognition and measurement criteria of IFRS.