

30 January 2024

UPDATE FOR THE QUARTER ENDING 31 DECEMBER 2023

MEC Resources Ltd (ASX: MMR, ACN 113 900 020) (“**MEC**” or “the **Company**”) is pleased to provide its Quarterly Report & Appendix 4C (“**Quarterly Cashflow Report**”) for the quarter ended 31 December 2023.

Operational Update

MEC has a non-controlling interest in the unlisted energy explorer Advent Energy Ltd (“**Advent**”) of 38.27%.

Advent holds a range of energy-based opportunities via its investee company Advent. Via Advent the Company has been assessing new investment opportunities, where there are ever increasing obligations to provide energy solutions with a responsible management and protection against carbon emissions. The transitioning from hydrocarbons such as coal and oil to hydrogen, produced with no emissions is now presenting real economies and growth globally. Although natural gas also presents continued growth and will play a role for many years to come, it too will need to become a source of energy with no CO2 emissions.

MEC continues to monitor its investment in Advent and has representation on the board of Advent in directors Anthony Huston, David Breeze and Steve James.

Advent Energy has provided the following information to MEC

PEP 11 Joint Venture

Advent Energy Limited’s (MEC 38.27% direct interest) 100% subsidiary Asset Energy Pty Ltd is a participant in the PEP11 Joint Venture with partner Bounty Oil and Gas NL (ASX:BUY).

The PEP11 interests are:

- Advent Energy 85 %
- Bounty Oil and Gas NL 15%

Asset Energy continues to progress the joint venture’s applications for the variation and suspension of work program conditions and related extension of PEP-11. This application follows from the fact that in February 2023 a decision by the previous Commonwealth-NSW Joint Authority to refuse the application was quashed by the Federal Court of Australia. Asset has provided additional updated information to the Commonwealth-NSW Joint Authority and the National Offshore Petroleum Titles Administrator (“NOPTA”) in relation to its applications.

On 22 November 2023, the NSW Legislative Committee on Environment and Planning tabled its report into the Minerals Legislation Amendment (Offshore Drilling and Associated Infrastructure Prohibition) Bill 2023, which was referred to the Committee on 29 June 2023. The Bill sought to amend three Acts to prohibit offshore activities in NSW including drilling for petroleum. The inquiry investigated a range of issues, particularly whether the Bill raises any potential constitutional issues and unintended consequences, and its report sets out its findings and proposed recommendations. The relevant link is set out below:

<https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=2977#tab-reportsandgovernmentresponses>

The Committee heard from legal experts and has found that aspects of the proposed legislation may be constitutionally invalid and have unintended consequences. The report makes 10 findings and 2 recommendations. The Committee has accordingly recommended that the Bill not pass.

On 9 October 2023 NOPTA updated their website whereby the NEATS Public Portal Application Tracking has been updated to show Asset Energy's applications' status is now 'Under Assessment'. The Company understands that the next step in the application process is for the Joint Authority to make its decision on Asset Energy's applications.

While the applications for the variation and suspension of work program conditions and related extension of PEP-11 are being considered by NOPTA, Asset is investigating the availability of a mobile offshore drilling unit to drill the proposed Seablue-1 well on the Baleen prospect which would take approximately thirty-five days to complete. Asset is in communication with drilling contractors and other operators who have recently contracted rigs for work in the Australian offshore beginning in the first half of 2024.

PEP-11 continues in force and the Joint Venture is in compliance with the contractual terms of PEP11 with respect to such matters as reporting, payment of rents and the various provisions of the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth).

Clean Hydrogen Technologies

Clean Hydrogen Technologies Corporation ("**Clean Hydrogen**") which is based in the United States, has established a Centre of Excellence ("**CoE**") in India, 6 hours north of Mumbai, for the purposes of research and development of its hydrogen technology.

As previously announced in the Company's quarterly report on 31 October 2023, MEC investee Advent now has a 3.9% interest in Clean Hydrogen.

BPH Energy Ltd ("**BPH**") and MEC investee Advent (together, the "**Purchasers**") have been assessing new investment opportunities, where there are ever increasing obligations to provide energy solutions with a responsible management and protection against carbon emissions. In 2019, the International Energy Agency reported that the transitioning from hydrocarbons such as coal and oil to hydrogen, produced with no CO₂ emissions, is now presenting real economies and growth globally (report prepared for the G20 held in Japan, titled The Future of Hydrogen Seizing Today's Opportunities)¹.

Clean Hydrogen has developed and tested its processing capabilities which have successfully produced hydrogen, with no CO₂ emissions, achieving on average above 90% cracking efficiency. Cracking efficiency refers to the percentage of hydrocarbons broken into solid carbon and hydrogen per hour. This high level of cracking efficiency has been consistently achieved across proof-of-concept tests undertaken by Clean Hydrogen in 2022 and 2023.

Clean Hydrogen have tested the performance of a number of catalysts in the period between April 2022 and September 2022 and have determined that several of the catalysts have given methane cracking conversion rate (efficiency) more than 90%, for several hours. To achieve these results, Clean Hydrogen currently uses

¹ International Energy Agency Global Hydrogen Review Report 2021

methane as its feedstock however, in the future, plans to use natural gas as its feedstock through the pyrolysis method (explained further below).

Clean Hydrogen's development activities and testing have shown that, by pyrolysis processing (not burning) methane gas using its catalyst in a modified fluidised bed reactor, it can produce hydrogen with no CO₂ emissions. This is referred to as Turquoise Hydrogen, which is hydrogen that is produced using the pyrolysis method, where the feedstock is natural gas (specifically the hydrocarbons such as acetylene, methane, butane, propane, and others). Pyrolysis is defined as the method of heating solids, liquids, or gases in the absence of oxygen². The pyrolysis process is not new and has been used by the oil industry for many years. What is new, is Clean Hydrogen's success in the efficiency of its cracking the methane into Turquoise Hydrogen with non-CO₂ emissions and the quality of the carbon black produced, being majority Carbon Nano-Tubes ("CNTs"), which are highly conductive and used in battery manufacturing.

In Clean Carbon's testing, the majority of the carbon formed (over 80%) from cracking hydrocarbons to date are CNTs. This type of carbon was determined using Scanning Electron Microscopy ("SEM") analysis, which enables the high-resolution imaging of single nanoparticles with sizes well below 1 nm or micron, as is the case for CNTs. The Clean Hydrogen process is more specifically called a thermos-catalytic pyrolysis, which uses 800-900 degrees heat centigrade in the reactor in the absence of oxygen.

The Company confirms that there are no non-CO₂ greenhouse gas emissions that are produced or released as a result of Clean Hydrogen's production process.

Steam Methane Reforming vs Clean Carbon pyrolysis process

Over 80% of the world's hydrogen is produced using a process called Steam Methane Reforming ("SMR")³. The Clean Hydrogen process requires similar energy needs as SMR, and at scale, Clean Hydrogen is of the view that it can be produced at a similar price.

Clean Hydrogen's Chief Science Officer, Dr Vivek Nair (PhD material science engineering) has examined research undertaken by Nuria Sánchez-Bastardo, Robert Schlögl, and Holger Ruland published in Industrial & Engineering Chemistry Research 2021 60 (32),11855-11881⁴, which shows that the electrical energy required to produce 1kg of hydrogen from SMR is 8.81 kwh, 39.69kwh for electrolysis and 5.24kwh for pyrolysis at the reaction level. As such, the pyrolysis process requires less energy than SMR to achieve cracking and uses the same feedstock, natural gas. This energy analysis is conducted without considering the benefits from the use of a catalyst in the pyrolysis process, such as Clean Hydrogen's catalyst, which implies that pyrolysis at scale can be cheaper than SMR. Further, as the process creates two products, which are hydrogen and CNTs, the combined income source provides a means to produce hydrogen at a cheaper net cost.

Clean Hydrogen

The Clean Hydrogen solution is being built with flexibility to work downstream at heavy transport fuelling hubs currently in use in the USA, mid-stream at steel plants replacing coking coal and upstream where the natural gas is processed into hydrogen, a much higher energy source which can be piped for all uses including the production of electricity. As such the technology being developed by Clean Hydrogen's solution requires

² Methane Pyrolysis: hydrogen without CO₂ Emissions' www.tno.nl/en/technology-science/technologies/methane-pyrolysis/

³ Nuria Sánchez-Bastardo, Robert Schlögl, and Holger Ruland Industrial & Engineering Chemistry Research 2021 60 (32), 11855-11881 <https://pubs.acs.org/doi/10.1021/acs.iecr.1c01679>

⁴ <https://pubs.acs.org/doi/10.1021/acs.iecr.1c01679>

very little change and impact to existing infrastructures and supply chains, unlike other solutions.

Clean Hydrogen has produced hydrogen beyond lab scale tests at the CoE and is now planning to scale up to commercial production in 2024. There are three (3) stages to Clean Hydrogen scaling to commercial production:

Stage 1 - Completed Stage:

Clean Hydrogen has completed work in 2022/2023 on how to scale the catalyst production at the CoE. They have also scaled the reactor to 1/3 of the internal diameter of the full-scale commercial system reactors planned for use in Stage 3, explained below.

Stage 2 - Current Commercial Stage:

Before moving to Stage 3, Clean Hydrogen plans to demonstrate the commercial viability of its two (2) products, Turquoise Hydrogen and solid carbon. This will be performed using a reactor half the internal diameter of the Stage 3 reactor. It will also require Clean Hydrogen to build the end-to-end process for separating out the hydrogen from the uncracked hydrocarbons and then compressing it into hydrogen bottle storage. Clean Hydrogen will demonstrate the commercial viability of its products by selling a carbon product, called carbon composite, made from majority based CNTs and Alumina and bottled hydrogen of 99%+ purity. Clean Hydrogen is currently in the final stages of the assembly of the end-to-end systems for this.

Stage 3 - Scale and Commercial:

The Stage 3 system is planned to have two (2) reactors working together, illustrating that Clean Hydrogen can scale several reactors together. Clean Hydrogen's final customer systems are planned to have a network of several reactors working together. Stage 3 is planned for completion in 2024.

Corporate Update

ASX Suspension Status

The Company's shares are currently suspended from the ASX however the Board continues to liaise and provide information to the ASX as it works towards the return of its shares to trading status.

On 12 January 2022, the Company made a further formal submission to the ASX following its original submission on 16 December 2020 which included a shareholder meeting seeking approval of various resolutions the aim of which is to have MEC readmitted to trading status. On 13 September 2022 the Company made a further follow-up submission.

Following the Company's recent 2023 AGM it is seeking to further engage with the ASX in relation to its previous submission.

Entitlement Offer

The Company is also working on an entitlement offer document which it expects to complete following feedback from the ASX in relation to its submission of 13 September 2022. The status of this matter has not changed since the September 2023 quarterly report.

Notice of 2023 Annual General Meeting

On 30 October 2023 MEC issued a notice of meeting in relation to its 2023 Annual General Meeting which was held on 29 November 2023.

As announced on 29 November 2023 Results of Meeting – all Resolutions were passed by shareholders.

Share Issues

Following 2022 AGM shareholders' approval on 2 August 2023 the Company issued shares on 19 October 2023 to settle directors' fees and services.

Date	Security Class	Number
19 October 2023	Ordinary shares	14,169,468

We once again thank you for your continued patience, support and welcome your questions/comments regarding the Company.

If you have any questions, please do not hesitate to contact David Breeze on 08 9328 8477 or email info@mecresources.com.au.

This announcement has been approved by the Board of Directors of MEC.

David Breeze
Managing Director
MEC Resources Ltd

Appendix 4C

Quarterly cash flow report for entities subject to Listing Rule 4.7B

Name of entity

MEC Resources Limited

ABN

44 113 900 020

Quarter ended ("current quarter")

31 DEC 2023

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
1. Cash flows from operating activities		
1.1 Receipts from customers	-	-
1.2 Payments for		
(a) research and development	-	-
(b) product manufacturing and operating costs	-	-
(c) advertising and marketing	-	-
(d) leased assets	-	-
(e) directors/staff costs	4	17
(f) administration and corporate costs*	(42)	(103)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	1	3
1.5 Interest and other costs of finance paid	-	-
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	-
1.8 Other (provide details if material)	-	-
1.9 Net cash from / (used in) operating activities	(37)	(84)
2. Cash flows from investing activities		
2.1 Payments to acquire:		
(a) entities	-	-
(b) businesses	-	-
(c) property, plant and equipment	-	-
(d) investments	-	-
(e) intellectual property	-	-
(f) other non-current assets	-	-

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (12 months) \$A'000
2.2	Proceeds from disposal of:		
	(a) entities	-	-
	(b) businesses	-	-
	(c) property, plant and equipment	-	-
	(d) investments	-	-
	(e) intellectual property	-	-
	(f) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	8	27
2.6	Net cash from / (used in) investing activities	8	27
3.	Cash flows from financing activities		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	-	-
3.2	Proceeds from issue of convertible debt securities	-	-
3.3	Proceeds from exercise of options	-	-
3.4	Transaction costs related to issues of equity securities or convertible debt securities	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
3.10	Net cash from / (used in) financing activities	-	-
4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	158	224
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(37)	(84)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	8	27

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (12 months) \$A'000
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	Cash and cash equivalents at end of period	113	158

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	113	158
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	113	158

6. Payments to related parties of the entity and their associates

- 6.1 Aggregate amount of payments to related parties and their associates included in item 1
- 6.2 Aggregate amount of payments to related parties and their associates included in item 2

Current quarter \$A'000
0
-

Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments

Quarterly cash flow report for entities subject to Listing Rule 4.7B

7. Financing facilities

Note: the term "facility" includes all forms of financing arrangements available to the entity.

Add notes as necessary for an understanding of the sources of finance available to the entity.

	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
7.1 Loan facilities	-	-
7.2 Credit standby arrangements	-	-
7.3 Other (please specify)	-	-
7.4 Total financing facilities	-	-

7.5 **Unused financing facilities available at quarter end** -

7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.

8. Estimated cash available for future operating activities	\$A'000
8.1 Net cash from / (used in) operating activities (Item 1.9)	(37)
8.2 Cash and cash equivalents at quarter end (Item 4.6)	113
8.3 Unused finance facilities available at quarter end (Item 7.5)	0
8.4 Total available funding (Item 8.2 + Item 8.3)	113
8.5 Estimated quarters of funding available (Item 8.4 divided by Item 8.1)	3.05

8.6 If Item 8.5 is less than 2 quarters, please provide answers to the following questions:

1. Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?

Answer:

2. Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?

Answer:

3. Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?

Answer:

Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Date: 30 January 2024.....

Authorised by: ..By the Board.....
(By the Board – see note 4)

Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standard applies to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.