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Joint venture to progress graphene oxide technology development

MELBOURNE, Australia – Clean TeQ Holdings Limited (**Clean TeQ** or **Company**) (ASX/TSX:CLQ; OTCQX:CTEQF) advises that, following the encouraging progress towards development of a graphene-oxide based water filtration membrane, Clean TeQ is to form an incorporated joint venture with Ionic Industries Pty Ltd (**Ionic**) to further develop and commercialise this exciting opportunity.

As previously announced, Clean TeQ has been working with Ionic Industries and Monash University to develop, manufacture and apply graphene oxide membranes for water filtration applications. While graphene and graphene oxide are the world's thinnest, strongest and most conductive materials yet discovered, with huge potential for industrial water filtration applications, difficulty in manufacturing processes and high production costs have to date severely limited their commercialisation.

Over the past 18 months, Clean TeQ and Ionic have successfully developed a process to manufacture high purity graphene oxide that can be applied to a membrane support to create a highly efficient graphene nanofiltration membrane (**GO-Membrane**). Significantly, the GO-Membrane manufacturing process has been demonstrated on commercial scale industrial equipment.

Graphene oxide-based membranes have the potential to deliver significant benefits due to their high water flux, tunability and non-fouling properties. The advantages of the membranes over existing commercially available membrane technologies include increased flow, better water recovery and lower energy costs.

Freshwater scarcity and the move to water reuse is driving growth in the water membrane filtration market and in spiral membranes, such as reverse osmosis and nanofiltration. The spiral membrane market is estimated at USD 5.10 billion in 2018 and is expected to grow to USD 8.20 billion by 2023. The major constraint to growth is the high operating costs for the end user. If successful, the development of a cost-effective GO-Membrane could displace a large proportion of the existing reverse osmosis and nanofiltration membrane technologies as well as creating opportunities for new water filtration applications.

lonic is a commercialisation partner of Monash University, with a framework agreement covering a range of graphene-based technologies being developed by Monash. In early 2017, Clean TeQ and Ionic entered into a partnership agreement which required Clean TeQ



to fund a \$200,000 programme of works for graphene oxide product development and testing with the Monash research team and at Clean TeQ's facilities. Subject to Clean TeQ successfully completing this product development and testing phase prior to 30 September 2018, Clean TeQ may, at its election, form a joint venture with lonic for the purpose of bringing the products to market in the field of water purification. Given the positive progress demonstrated during the product development and testing phase, Clean TeQ has elected to progress to the next phase of the partnership with lonic through the formation of the joint venture.

The joint venture with lonic will be structured as a newly incorporated joint venture (**JV Co**) owned 75% by Clean TeQ and 25% by lonic. Ionic will grant a sub-licence of its GO technologies to JV Co in the field of water purification. Both partners will fund pro-rata expenditure in JV Co to progress development and commercialization of the technology.

Once established, JV Co will be focused on achieving commercial scale production of graphene oxide and GO-Membranes, as well as water purification modules targeted at wholesale and retail customers.

The JV Co will be led by Peter Voigt, Clean TeQ's founder and Chief Technology Officer, who said "Through the use of advanced materials, like graphene oxide, we have an opportunity to significantly improve and grow the membrane water filtration market. Graphene's amazing properties provide a window into a new world of water recovery and reuse."

Commenting on the decision to progress to the next phase of development via the establishment of the joint venture, Clean TeQ's Managing Director and Chief Executive Officer, Sam Riggall, said, "*Clean TeQ's vision is focused on empowering the clean revolution through incremental innovations that provide better performance at lower cost. The application of graphene oxide-based membranes to water treatment is showing strong commercial viability and we look forward to this new joint venture continuing the ground-breaking work in this space.*"

For more information, please contact:

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About Clean TeQ Holdings Limited (ASX/TSX: CLQ) – Based in Melbourne, Australia, Clean TeQ is a global leader in metals recovery and industrial water treatment through the application of its proprietary Clean-iX® continuous ion exchange technology. For more information about Clean TeQ please visit the Company's website <u>www.cleanteq.com</u>.

About the Clean TeQ Sunrise Project – Clean TeQ is the 100% owner of the Clean TeQ Sunrise Project, located in New South Wales. Clean TeQ Sunrise is one of the largest cobalt deposits outside of Africa, and one of the largest and highest-grade accumulations of scandium ever discovered.

About Clean TeQ Water – Through its wholly owned subsidiary Clean TeQ Water, Clean TeQ is also providing innovative wastewater treatment solutions for removing hardness, desalination, nutrient removal, zero liquid discharge. The sectors of focus include municipal wastewater, surface water, industrial waste water and mining waste water. For more information about Clean TeQ Water please visit www.cleanteqwater.com.



FORWARD-LOOKING STATEMENTS

Certain statements in this news release constitute "forward-looking statements" or "forward looking information" within the meaning of applicable securities laws. Such statements involve known and unknown risks, uncertainties and other factors, which may cause actual results, performance or achievements of the Company, , or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements or information. Such statements can be identified by the use of words such as "may", "would", "could", "will", "intend", "expect", "believe", "plan", "anticipate", "estimate", "scheduled", "forecast", "predict" and other similar terminology, or state that certain actions, events or results "may", "could", "would", "might" or "will" be taken, occur or be achieved. These statements reflect the Company's current expectations regarding future events, performance and results, and speak only as of the date of this news release.

Statements in this release that constitute forward-looking statements or information include but are not limited to, statements regarding: the completion of the joint venture with lonic; the development of a cost-effective GO-Membrane could displace a large proportion of the existing reverse osmosis and nanofiltration membrane technologies as well as create opportunities for new water filtration applications; and that the spiral membrane market is expected to grow to USD 8.20 billion by 2023.

Readers are cautioned that actual results may vary from those presented. All such forward-looking information and statements are based on certain assumptions and analyses made by Clean TeQ's management in light of their experience and perception of historical trends, current conditions and expected future developments, as well as other factors management believe are appropriate in the circumstances. These statements, however, are subject to a variety of risks and uncertainties and other factors that could cause actual events or results to differ materially from those projected in the forward looking information or statements including, but not limited to, unexpected changes in laws, rules or regulations, or their enforcement by applicable authorities; and the failure of parties to contracts to perform as agreed.

Other important factors that could cause actual results to differ from these forward-looking statements also include those described under the heading "Risk Factors" in the Company's most recently filed Annual Information Form available under its profile on SEDAR at <u>www.sedar.com</u>.

Readers are cautioned not to place undue reliance on forward-looking information or statements.

Although the forward-looking statements contained in this news release are based upon what management of the Company believes are reasonable assumptions, the Company cannot assure investors that actual results will be consistent with these forward-looking statements. These forward-looking statements are made as of the date of this news release and are expressly qualified in their entirety by this cautionary statement. Subject to applicable securities laws, the Company does not assume any obligation to update or revise the forward-looking statements contained herein to reflect events or circumstances occurring after the date of this news release.