

Form 51-102F3
Material Change Report

Item 1 Name and Address of Company

ZEN Graphene Solutions Ltd. (the “**Company**”)
210 – 1205 Amber Drive
Thunder Bay, ON P7B 6M4

Item 2 Date of Material Change

December 20, 2019

Item 3 News Release

The news release was disseminated on December 20, 2019.

Item 4 Summary of Material Change

Item 5 Full Description of Material Change

Item 6 Reliance on subsection 7.1(2) of National Instrument 51-102

Neither subsection 7.1(2) nor (3) of National Instrument 51-102 is being relied upon.

Item 7 Omitted Information

No information has been omitted on the basis that it is confidential information.

Item 8 Executive Officer

Francis Dubé
Chief Executive Officer
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DATED: December 20, 2019

Schedule "A"

ZEN Graphene Solutions Provides Corporate Update

Thunder Bay, ON – December 20, 2019, ZEN Graphene Solutions Ltd. ("ZEN" or the "**Company**") (TSXV:ZEN) has closed its previously announced private placement of flow-through common shares of the company and reports that it was oversubscribed. The company raised \$1.21-million in respect of the offering, which will be used to finance the 2020 environmental baseline field program and community engagement work on the company's Albany graphite project.

The offering consisted of the issuance of 3.025 million flow-through common shares at a price of 40 cents per flow-through common share for aggregate gross proceeds of \$1.21 million. Finders' fees in an aggregate amount of \$54,840 were paid by the company in connection to the offering.

The flow-through common shares issued in connection with the offering will be subject to a hold period until April 20, 2020, in accordance with applicable securities laws.

Graphene Production and Graphene Oxide Research Update

The Company is moving forward with graphene production and anticipates that small-scale graphene related production will commence before the end of Q1 2020. The first batch of equipment for the purification small-scale pilot plant was delivered this week. In the coming months, ZEN is aiming to setup small-scale graphite purification and graphene-related production facilities including Graphene Quantum Dots (GQDs) and Graphene Oxide (GO). These products will be available for research and development, application development and for commercial use.

In addition, the Company reports that Prof. Aicheng Chen and his team at the University of Guelph was recently awarded a \$310,000, three-year NSERC CRD grant to continue developing an environmentally friendly and commercially scalable electrochemical process to produce GO and GQDs. ZEN looks forward to continuing its strong collaborative relationship with Prof. Chen and his team.

Graphene in Aluminum Products \$450,000 Alliance Grant

The Company together with an industrial collaborator in the aluminum business are jointly supporting a Natural Sciences and Engineering Research Council ("NSERC") Alliance grant application by Dr. Lukas Bichler, a materials engineer from the University of British Columbia in Okanagan. This application followed promising results earlier this year where Dr. Bichler and his team used ZEN's graphene products in aluminum alloys. NSERC recently approved the \$450,000, three-year Alliance grant. ZEN looks forward to working with its aluminum industrial collaborator and Dr. Bichler to create innovative aluminum products for the automotive industry.

Environmental Baseline Program Update

The Company reports that in late November, the first full open water field season for the environmental baseline program for the Albany Project came to a successful close. All the program objectives were met with a wide range of data collected over a period of eight months. The collected data initiates the physical and biological characterization

of the site needed for project development planning and regulatory permitting. ZEN is working closely with ERM Canada Ltd.'s ("ERM") team of scientists, biologists, and engineers. Members from the Constance Lake First Nation ("CLFN") were also important members of the field teams providing local knowledge and supported the process of data collection ([click here](#) to see CLFN videos of the various field activities). ERM is leading the desktop and fieldwork associated with this program on behalf of ZEN. ERM is a leading global provider of environmental, health, safety, social and sustainability consulting services with over three decades of experience in the Canadian mining industry.

About ZEN Graphene Solutions Ltd.

ZEN is an emerging graphene technology solutions company with a focus on the development of graphene-based nanomaterial products and applications. The unique Albany Graphite Project provides the company with a potential competitive advantage in the graphene market as independent labs in Japan, UK, Israel, USA and Canada have independently demonstrated that ZEN's Albany Graphite/Naturally Pure™ is an ideal precursor material which easily converts (exfoliates) to graphene, using a variety of mechanical, chemical and electrochemical methods.

For further information:

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To find out more on ZEN Graphene Solutions Ltd., please visit our website at www.ZENGraphene.com. A copy of this news release and all material documents in respect of the Company may be obtained on ZEN's SEDAR profile at www.sedar.ca.

Forward Looking Statements

This news release contains forward-looking statements. More particularly, this news release contains statements concerning the acceptance of the engagement of Storyboard by the TSX Venture Exchange and the anticipated monthly fees payable to Storyboard. Although the Company believes that the expectations reflected in these forward-looking statements are reasonable, undue reliance should not be placed on them because the Company can give no assurance that they will prove to be correct. Since forward-looking statements address future events and conditions, by their very nature they involve inherent risks and uncertainties. Although ZEN believes that the assumptions and factors used in preparing the forward-looking information in this news release are reasonable, undue reliance should not be placed on such information, which only applies as of the date of this news release, and no assurance can be given that such events will occur in the disclosed time frames or at all. ZEN disclaims any intention or obligation to update or revise any forward-looking information, whether as a result of new information, future events or otherwise, other than as required by law. Neither the TSX Venture Exchange nor its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release.