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AUSTRALIAN SECURITIES EXCHANGE ANNOUNCEMENT

13 January 2023

EdenCrete® - Results from 2019 GDOT Bridge Trial

Eden Innovations Ltd ("Eden") (ASX: EDE) is pleased to report that it has received the results from the two and a half year-long field trial on the Little River Bridge in Georgia that was undertaken with Georgia Department of Transportation (GDOT) in November 2019 to assess the performance benefits delivered by EdenCrete® to the concrete used in the new bridge decking (see Eden's ASX announcement dated 26 November 2019). Details of the results are as follows:

- Bridge deck trial - November 2019 - EdenCrete® added at 2 gallons per cubic yard of concrete
- EdenCrete® delivered the following compressive and flexural strength (tested in 2019):
 - After 24 Hours - Compressive strength - 2767 PSI (12% over design)
 - After 72 Hours - Compressive strength - 4790 PSI (37% over design)
 - After 28 Days - Compressive strength - 6787 PSI (70% over design)
 - After 28 Days - Flexural strength - 915 PSI (41% over design)
- After two and a half years of service, cores from the EdenCrete® and the reference concrete were taken from the decking, pulverised and the depth of chloride penetration in each was then measured. Compared to the reference, the EdenCrete® delivered:
 - 37.5% reduction in chloride concentration at 14.5 mm depth
 - 50% reduction in chloride concentration at 18 mm depth



Figure 1. Little River bridge trial- showing freshly installed concrete

Potential Significance of Little River Trial Results

- A major contributing factor to the breakdown of concrete that incorporates steel reinforcement used in the construction of bridges or concrete access and egress roads, is sufficient chloride penetration to the depth of the reinforcing steel where it chemically reacts with the steel causing it to rust and expand and crack the concrete.
- The Australasian Corrosion Association Inc. describes this problem and the importance of designing projects to avoid or minimise the effects as follows:

“Corrosion of the reinforcing steel in concrete is a worldwide problem that causes a range of economic, aesthetic and utilisation issues. However, if corrosion effects are considered in the design phase and the right decisions made prior to construction, buildings can be built to last and protected for as long as possible. The corrosion of steel in concrete is accelerated in harsh environments, especially coastal, tropical or desert hotels and resorts where high salt levels or extreme temperatures can accelerate the rate of decay.

Usually, the most exposed elements deteriorate first but because the active corrosion may take 5 to 15 years to initiate cracks in the concrete, much of the actual corroded reinforcement is not visible. It is important that owners of high-value assets, such as hotels, understand the cost implications of ignoring the effects of corrosion on concrete buildings and structures.

There are many advantages of planning for corrosion control and mitigation. Two of the main ones are that the life of an asset is extended and maintenance time and costs are reduced. In addition, reduced maintenance requirements increase the asset’s overall utilisation and can improve its environmental sustainability.”¹
- In the USA, most bridges incorporate steel reinforcing in the concrete, and in addition to the environmental conditions referred to above, these bridges are often exposed to freezing winter conditions and the application of salt and de-icing chemicals as frequently as may be required by the winter weather conditions.
- The highly significant reductions in chloride concentration at deeper levels in the concrete seen in the Little River Bridge trials of:

37.5% reduction in chloride concentration at 14.5 mm depth
50% reduction in chloride concentration at 18 mm depth

delivered by EdenCrete® provide what Eden considers to be very compelling, longer-term, real-life data that in Eden’s opinion strongly support the view that EdenCrete® should be included in concrete that is used in appropriate concrete bridge building and repair work in the USA.
- The addition of EdenCrete® adds only a small percentage to the total construction cost and the full benefits delivered by the EdenCrete including:
 - Increased compressive and flexural strength;
 - Increased abrasion resistance; and
 - Reduced permeability delivering lower chloride concentrations in the concreteresult in both a significantly extended life cycle and also a reduction in maintenance during that service life of the bridges providing compelling support for the inclusion of EdenCrete® in the concrete.
- Relevantly, a meeting with GDOT is presently being arranged to review these results, and Eden is optimistic that this may lead to GDOT deciding to use EdenCrete® in appropriate bridge projects.
- Repairing, maintaining and building bridges are a major part of GDOT’s budget. The following are the 21 GDOT bridge repair projects listed for the first four months of 2023:

Project ID	Description	County	Cost USD
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January 2023

0013817	SR112@Commissioners Creek	Wilkinson	7,000,000
0015567	SR 60@ Suches Creek	Union	3,000,000
0017777	CR251/Wardlow Rd@W. Fork Creek	Turner	2,000,000
M006197	SR3@2 loc @SR 333	Brooks	2,000,000
M006346	I75@SR3 Conn &I85 @SR 139	Floyd	2,000,000

February 2023

0013811	SR77 Spur @Little Coldwater Creek	Hart Co.	3,000,000
0013812	SR77 Spur @ Cedar Creek	Hart Co.	4,000,000
0015534	SR3/US 41 NB@SR 293	Emerson	8,000,000
0015535	SR3/41SB@SR293/CSX#340429D	Bartow	6,000,000
0015544	SR293 @Dykes Creek East of Rome	Floyd	6,000,000
0016123	CR101/Lower Cartecay River	Gilmer	3,000,000
0017424	CR333/Concord Rd @Birch Creek	Pike	1,000,000
0017778	CR685/Birdford Lake Rd@Breads Creek	Tattnail	2,000,000
0017779	CR115/Harden Chapel Rd @ Rocky Creek	Toombs	1,000,000

March 2023

0013603	SR212 @ Lake Jackson	Jasper	10,000,000
00155547	SR2/SR515 US76 Big Turniptown Creek	Gilmer	4,000,000
0015556	SR9/US19@Chestatee River	Lumpkin	4,000,000
M006312	I95 SB-NB@Bulltown swamp@cay creek	Liberty	1,000,000
M006316	I-185 @4 loc in Muscogee	Muscogee	2,000,000
M006317	I75 @ 3 loc Cook, Lowndes and Tift	Lowndes	3,000,000

April 2023

0013600	SR109@NS#719349N Greenville	Meriwether	1,000,000
0013715	SR10 Loop EB/WB @Middle Oconee River	Clarke	10,000,000
0013746	SR385@Hazel Creek In Demorest	Habersham	4,000,000
0015568	SR83@Polecat Creek	Walton	2,000,000
0015619	CR96/J Frank Culpepper & Enoch Creek	Echols	1,000,000
0017878	CR179/Tucker Rd@ Polecat creek	Troup	<u>1,000,000</u>
TOTAL			93,000,000

1. <https://membership.corrosion.com.au/blog/correcting-concrete-corrosion/>

EdenCrete® Background

EdenCrete® products are Eden's 100% owned, proprietary carbon-strengthened concrete additives that enhance a wide range of performance characteristics of the concrete including compressive strength, flexural strength, tensile strength, abrasion resistance, reduced permeability, increased

modulus of elasticity, reduced shrinkage and that collectively deliver stronger, tougher, more durable, and longer lasting concrete.

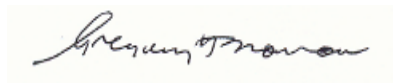
EdenCrete® is generally used in concrete that incorporates a high percentage of Ordinary Portland Cement (OPC or Portland cement) whilst EdenCrete® Pz and EdenCrete® Pz7 are mostly used in concrete that incorporates a higher percentage of pozzolans as an alternative cementitious material (including fly-ash and blast furnace slag which are each waste by-products from coal fired power stations and metal smelting respectively, thereby each being treated, as a waste by-product, as having a zero Greenhouse Gas footprint from its production process).

As a result, EdenCrete® Pz and EdenCrete® Pz7 have repeatedly shown they enable the proportion of the Portland cement in the concrete to be replaced by a percentage of pozzolans with far lower Greenhouse Gas footprints, resulting in a reduction in the Greenhouse Gas footprint generated in the production of the various cementitious components used in the manufacturing of the concrete.

EdenCrete® has been repeatedly shown to be suitable for use in ready-mix concrete, pre-cast and pre-stressed concrete, shotcrete, pumped concrete, and volumetric concrete.

One of the primary target markets for EdenCrete® products is improving the performance of concrete used in the construction and maintenance of concrete roads, bridges, ports, airports, and other infrastructure, particularly where it is subject to heavy wear, freeze/thaw weather conditions, heavy snow falls, and/or high levels of added salt or de-icing chemicals.

Since 2015, EdenCrete® products have been sold in the USA and more recently also in Australia and a growing number of other countries. They have successfully and repeatedly delivered a wide range of benefits when incorporated into concrete that is used in many different applications, including low-rise, medium-rise and high-rise building construction, roads and bridges, ports/marine/coastal applications, bus stations, car parks, water pipes, hardstand areas, waste transfer stations, warehouses, shotcrete applications, stadiums, and pre-stressed and pre-cast concrete products.



Gregory H. Solomon
Executive Chairman

This announcement was authorised by the above signatory.
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