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## AUSTRALIAN SECURITIES EXCHANGE ANNOUNCEMENT

22 January 2020

### EdenCrete® - Global Sales and Marketing Update

#### HIGHLIGHTS

##### USA

- Significant growth in EdenCrete's US footprint
- EdenCrete® products being sold or trialled in 11 US States
- US sales team being restructured and sales representatives appointed
- 18 US State DOTs have approved the use of EdenCrete® in roads and bridges
- EdenCrete® continues to be included in all concrete highway repairs in Georgia
- Second FHWA funded contract in Georgia which will be completed towards the end of February 2020 will use approximately US\$550,000 worth of EdenCrete®
- DOT road trials underway in Colorado and Idaho
- DOT bridge trials underway in Georgia, Virginia and North Carolina
- MARTA projects expected to start in 2020
- Increasing interest for warehouse floors and industrial hard stand areas
- Growing number of ready mix operators, shotcrete operators, and contractors using EdenCrete® products on a regular basis in several States.
- First sale in New York city for low-midrise building construction applications

##### INTERNATIONAL

- India - advanced trials of lower cost, higher performing concrete
- Europe - advanced trials in two European countries for a range of applications
- Australia – commercial trials have commenced - 40 trial requests received to date
- Korea – trials with a number of large companies are continuing

## DETAILS

Global market interest in EdenCrete® continues to grow. Over the past six months, in the US, the number of States where EdenCrete® products are either being sold and/or tested, and the number of both customers and potential customers, continues to grow.

Internationally' there are many trials at an advanced stage and it is hoped that these will translate into commercial sales during 2020.

## USA

### GROWTH OF US FOOTPRINT

Regular sales to repeat US customers continue in a number of States, for a range of projects including building construction and maintenance, driveways, industrial flooring, shotcrete applications, and highway repairs.

During the last six months, sales of EdenCrete® products have taken place in Georgia, Colorado, New York and South Carolina.

During this same period, trials with new and potentially significant customers that operate in a range of market sectors, took place (or are presently underway or being planned) in Georgia, Colorado, New York, South Carolina, Utah, Illinois, Indiana, Wisconsin, Oklahoma, Florida and Pennsylvania.

This significant extension of the EdenCrete® footprint in the US is seen as an important development and is considered likely to result in a significantly increased US sales footprint emerging over the coming year.

Experience over the past three years has shown that a considerable proportion of the growth in EdenCrete® sales over this time has occurred following successful trials or projects, with news of the successes being passed on to potential new customers by various means, including by contractors who undertook the successful project.

### US EDENCRETE® SALES FORCE

To service this increasing interest in the USA, the structure of the US sales team has been reviewed and two or three new sales people are planned.

Additionally, Eden has also appointed, or is discussing the possible appointment of a number of new sales representatives that will sell EdenCrete® products on a commission-only basis. To date sales representatives have been appointed for Texas, Wisconsin, Illinois and Indiana.

## KEY US TARGET MARKET SECTORS

### INFRASTRUCTURE

Infrastructure remains a key US target market for EdenCrete®

### ROADS AND BRIDGES

#### State DOT Approvals

EdenCrete® is presently approved in the 18 States listed below and EdenCrete®Pz is approved for use in 12 States (see Figure 1).

These 18 States are Alabama, Alaska, Arkansas, California, Colorado, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Vermont, Virginia and West Virginia

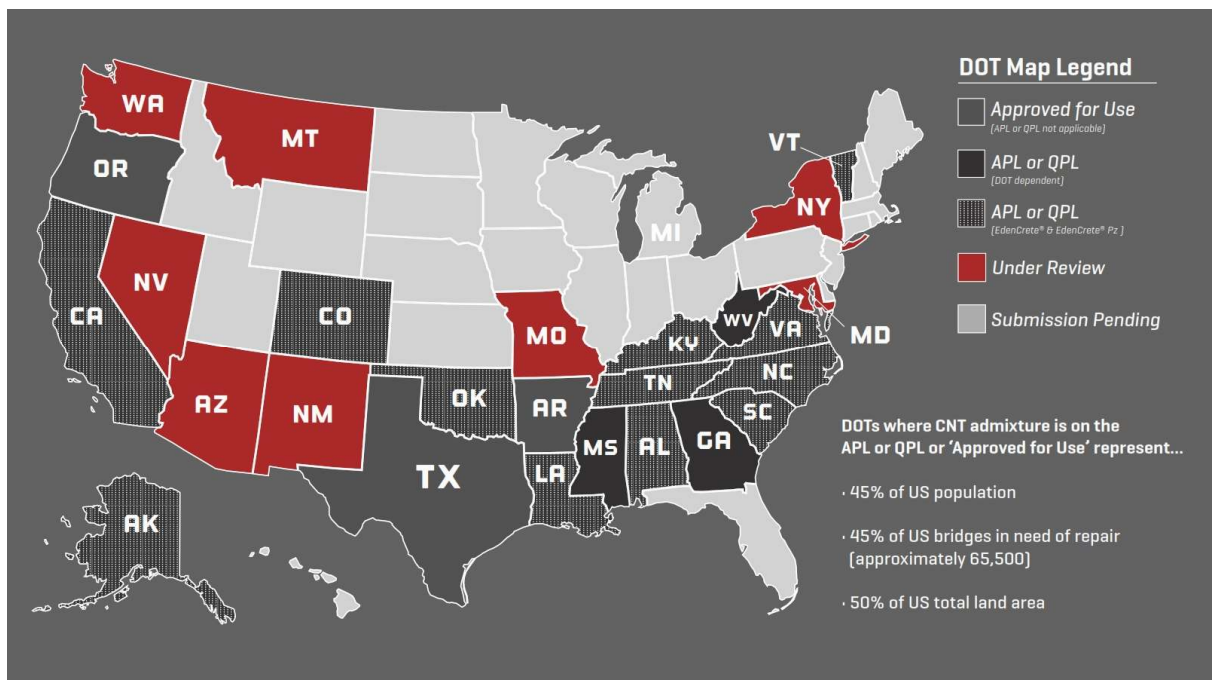


Figure 1. Current status of US DOT approvals

The successful completion in mid-2019 of the National Transportation Product Evaluation Programme (NTPEP) 12 months' assessment of both EdenCrete® and EdenCrete®Pz opened up most of the remaining States for having EdenCrete® added to their Approved (or Qualified) Product lists, thereby opening the possibility of EdenCrete® being used in concrete for their roads and bridges.

NTPEP is run by AASHTO (American Association of State Transportation Officials).

EdenCrete® is currently in use, or is being trialled, in Department of Transportation projects in Georgia, Colorado and Idaho.

## **ROADS**

### **Georgia**

In addition to EdenCrete® continuing to be included in the 24 hour concrete repair mix specifications of Georgia Department of Transportation (GDOT) (which results in EdenCrete® being in all new State funded repair projects), it has also been successfully used in its first two joint Federal Highway Administration (FHWA)/ GDOT funded repair project in Georgia. The second Federal funded project is still underway and it is now anticipated that when it is finished around the end of February 2020, it will have required US\$550,000 worth of EdenCrete®.

Preliminary steps are also underway to have EdenCrete® added to the GDOT Qualified Products List for new concrete pavements, following the successful completion of a 12 month field trial.

### **Colorado**

Since 2016, EdenCrete® has been, and is continuing to be, trialled for a number of infrastructure applications in Colorado by various Government bodies. These include the Colorado Department of Transportation (CODOT), the Denver Public Works, and the Bureau of Reclamation, which between them have trialled EdenCrete® in both ready mix concrete and shotcrete, on or for use in State and Federal highways, roads, bridges, tunnels, and dams, and to date it has also been used commercially in a number of projects.

Both EdenCrete® and EdenCrete®Pz have been approved for use by CODOT and have been trialled in various projects for more than 2 years in a range of applications including testing for abrasion resistance, resistance to scaling generated by the application of de-icing chemicals, compressive strength and ability to assist in the performance of shotcrete mixes.

Continued growth in both the number of repeat orders and the range of applications for which EdenCrete® may be used in infrastructure projects in Colorado, is expected as the various long term field trials that are underway (some of which have been running for more than 2 years) are completed.

Additionally, this anticipated increase in the use of EdenCrete® in infrastructure projects will also be assisted by the increasing number of Colorado based ready mix and shotcrete suppliers that already have standard commercial concrete mixes that include EdenCrete®, as well as the growing number of contractors who have successfully used EdenCrete® in projects.

### **Idaho**

EdenCrete® is also being trialled in concrete mixes for use on roads by the Idaho Department of Transportation.

## **BRIDGES**

Repair of bridges is a major challenge in the US, with the US DOT in 2015 having estimated that over 146,000 bridges in the US, or more than 24% of all the bridges in the US, are either structurally deficient or functionally obsolete. This problem represents a major opportunity

for EdenCrete®, which can greatly assist in producing longer term, cost effective solutions when added into concrete to be used in repairs or construction of bridges.

In addition to Texas where EdenCrete® has been approved by the Texas DOT for use in a concrete mix used for constructing major bridge beams, EdenCrete® is currently also being field trialled in concrete on bridges with the Departments of Transportation in Georgia, Virginia and North Carolina for a range of applications.

The first of these 24 month long trials will be completed later in 2020, after the successful completion of which it is hoped that EdenCrete® may then start to be incorporated into design specifications for future bridge repairs and construction.

In Texas, Eden has been continuing to work with the large prestressed bridge beam manufacturer in Texas that, until April 2018, had, with the approval of the Texas Department of Transportation, used EdenCrete® in highway bridge beams for over 12 months. Over the past 12 months, Eden has developed two new and more cost effective concrete mix designs for use in prestressed highway bridge beams in Texas, that are hoped will result in a resumption of use on a regular basis by the bridge beam manufacturer.

## **RAILWAYS AND MASS RAPID TRANSIT SYSTEMS**

### **MARTA**

The Metropolitan Atlanta Rapid Transit Authority (MARTA) published a joint white paper with Eden in 2018 detailing the strong performance of EdenCrete® achieved in a two year field trial at the Brady Mobility Facility in Atlanta, Georgia. MARTA remains a high priority target for use of EdenCrete® products in suitable future infrastructure projects.

Eden has been in recent discussions with MARTA, which has a number of station rehabilitation projects planned over the next few years, and Eden is hopeful that the first suitable project that uses EdenCrete® will be nominated during 2020.

US railway networks and mass rapid transit systems are expected to increase in importance over the coming years as the population levels continue to rise in densely populated urban areas and concern with reducing greenhouse gas emissions grows.

The anticipated inclusion in one or more MARTA projects will provide a very strong recommendation for EdenCrete® that is considered likely to assist in the future marketing into these sectors in both other US cities as well as other countries.

## **PORTS, MARINE AND COASTAL APPLICATIONS**

### **Georgia Port Authority- Port of Savannah**

Ports, together with a broad range of coastal and marine applications, represent a major focus in the EdenCrete® sales and marketing strategy.

The performance characteristics of EdenCrete® relevant to these environments, namely low permeability, strong resistance to scaling and attack by salt and chemicals, and abrasion

resistance, have been extensively tested and are amongst the highest performing characteristics of EdenCrete®.

The first major opportunity to undertake a trial in this market was agreed with the Port of Savannah (part of the Georgia Port Authority) in August 2019. The Port has agreed to conduct a trial of EdenCrete® in a section of concrete on one of its wharves that is subject to a very heavy loading and abrasion from the wheels of the large container cranes moving back and forth as containers are loaded and unloaded.

This trial is expected to take place in the reasonably near future when a suitable test area is identified.

The Port of Savannah is the third busiest container port in the US, currently handling approximately 2 million TEUs (twenty foot container equivalent) per annum, and this is projected to increase to 8 million TEU per annum over the next 8-10 years, and a major expansion programme is planned for the Port to handle this increased volume.

This market sector, which is expected to continue growing as global sea trade increases around the world and ocean levels continue to rise, is a potentially very large market for EdenCrete®, as frequent repairs are required due to the wear and breakdown of the concrete that occurs in high salt conditions.

## **INDUSTRIAL AND COMERCIAL APPLICATIONS**

### **Flooring and Hard Stand Areas**

A key focus area over the past six months, initially mainly targeting Georgia, Colorado and surrounding States, has been industrial business applications including manufacturing and warehouse flooring, and surrounding hard stand areas.

During this period, the first order was received for EdenCrete® for use in a concrete storage area in a plant in South Carolina for a major international tyre company.

As a result of subsequent recommendations by the contractor involved in this project, trials of EdenCrete® were conducted with another large company in South Carolina and a positive outcome from these trials has resulted in EdenCrete® receiving an order and being used in a similar project in South Carolina for this other company.

Interest, for similar applications, in the broad range of performance benefits and project lifecycle cost savings delivered by EdenCrete® continues to grow amongst a range of general contractors, architects and engineers, and ready mix suppliers.

### **Ready-mix applications**

#### **New York City**

During the past six months, following completion of a two-year development programme, EdenCrete®Pz which was developed for use in pozzolanic concrete mixes, is gaining market acceptance. During this period, Eden received its first order for EdenCrete®Pz from a New York based ready mix supplier and supplied the product for use in a range of commercial and industrial applications including low-midrise construction projects.

## **Georgia/ South Carolina**

Several ready mix companies in these States, are selling proprietary EdenCrete® concrete mixes, or are developing, or trialling such mix designs. Based upon our successful experience with a number of ready mix companies in Colorado, over the next 12 -24 months it is expected that there will be a steady increase in both the number of new ready mix companies with proprietary EdenCrete® concrete mixes, and the number of States in which they are selling these concrete mixes.

# **INTERNATIONAL**

## **India**

During the past six months, significant progress has been made with a number of large companies in India with trials that in several cases are now at an advanced stage.

Great interest is being shown in EdenCrete®Pz enriched concrete mixes that often include a significantly higher percentage of very low cost Indian fly ash and a reduced quantity of the more expensive Portland cement, frequently resulting in lower cost, higher performing concrete. In some cases these trials have advanced from laboratory trials to truck trials.

The Indian concrete market is amongst the largest concrete markets in the world, and the readily available, low cost flyash makes this market one of Eden's most exciting prospects.

## **Europe**

Similarly, in two separate countries in Europe, advanced trials are underway with a major construction company and a ready mix concrete company, following extensive laboratory trials over the past six months. Requests for trials have also been received from a number of other European and Middle Eastern countries.

A successful outcome from either or both of these current European trials would provide a strong launching pad into both the large and highly developed European concrete market, and potentially also into the Middle Eastern market.

Relevantly, European companies in particular are concerned with the Greenhouse Gas footprint of their products and in some cases, particularly when higher percentages of low Greenhouse Gas footprint pozzolans such as blast furnace slag and/or flyash can be used, this can often be achieved at a lower cost than using alternative mix designs.

## **Australia**

In November 2019, Parchem Construction Supplies Pty Ltd, the Australian and New Zealand distributor of the EdenCrete® range of products, was successful in obtaining approval in Australia for EdenCrete® to be imported and trialled. The delay in obtaining this approval was due to no prior applications having been made to import into Australia products containing carbon nanotubes.

Commercial trials have since commenced and Parchem has already received approximately 40 requests to conduct commercial trials. It is hoped that the final approval that will enable commercial sales in Australia to commence, will be received later in 2020.

The commercial interest received to date is very encouraging and is hoped will rapidly translate into significant commercial sales in Australia once this final approval is obtained.

## **Korea**

Trials in Korea are continuing with a number of major companies. These follow the highly successful trials at Hanyang University at the end of 2018. If encouraging results are achieved in these trials, Eden is hopeful that they will translate into significant commercial sales later in 2020.

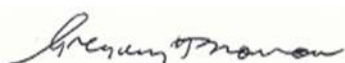
## **Conclusion**

The commercial rollout of EdenCrete® in the USA is gaining momentum, and as more commercial projects take place in different States, the growth rate in US EdenCrete® sales is anticipated to increase significantly. Similarly, significant progress is being made with trials in the international market, and it is expected that during the coming year at least some of these trials will lead to significant commercial sales.

## **BACKGROUND**

*EdenCrete® is Eden's 100% owned, proprietary carbon-strengthened concrete additive that enhances a wide range of performance characteristics of the concrete including compressive strength, flexural strength, tensile strength, abrasion resistance, reduced permeability, increased modulus of elasticity, and reduced shrinkage, delivering stronger, tougher, more durable and longer lasting concrete.*

*One of the primary target markets for EdenCrete® is improving the performance of concrete used in the construction and maintenance of concrete roads, bridges and other infrastructure, particularly where it is subject to heavy wear, freeze/thaw weather conditions and/or high levels of added salt. Additionally, it has potential for use in most other concrete applications including high-rise building construction, marine and coastal applications, water storage and pipelines, hardstand areas, warehouses, shotcrete applications and pre-stressed and pre-cast concrete structures and products.*



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