



Innovations that work.™

ASX Quarterly Report

For the Quarter Ended 31 March 2018

HIGHLIGHTS

EdenCrete®

- **Progress in Georgia.**
 - The first GDOT Federal/State funded repair project advertised in April - anticipated it may require US\$525,000 worth of EdenCrete®.
 - GDOT - To date 10 State funded repair projects that require over US\$430,000 of EdenCrete®, are in progress, due to start or awaiting bids.
 - Currently up to 10 further GDOT State Funded repair projects that could require up to US\$440,000 of EdenCrete® remain to put out for bid before end June 2018.
- **Colorado**
 - EdenCrete® successfully trialled against a competitive product on an ingress onto CDOT State Highway 287.
 - Town of Gypsum tested EdenCrete® on golf course bridges and plans further test on roundabout repair project as trial for Gypsum's Master Development Plan.
 - EdenCrete® roundabout repair project on State Highway in Vail completed.
 - US\$11,000 of EdenCrete® sold for factory floor and order for a second building was received.
- **North Carolina**
 - North Carolina DOT bridge trial of EdenCrete® planned in next few months
- **Other Trials**
 - Trials for commercial applications underway and 2 DOT bridge trials planned.
 - NTPEP trials of EdenCrete®HC and EdenCrete®Pz initiated with NTPEP.

Optiblend® Dual Fuel

- OptiBlend® kits received Confederation of Indian Industry GreenPro certification.
- US\$69,000 of Optiblend® Orders received in USA and India during the quarter

Corporate

- Eden completed a placement raising A\$6.325 million at 11 cents per share.
- Eden raised A\$1.65 million during the quarter from the exercise of EDEO options.

DETAILS

EDENCRETE® (Eden 100%)

Georgia

First GDOT Federally Funded Repair Project

The Invitation to Bid (ITB) for the first major Federal /State funded repair project on the interstate Highway I-16 in Twiggs County, Georgia was issued in April 2018. The ITB included performance requirements intended to enable EdenCrete® to be used in this project, which will involve the replacement of numerous sections along approximately 11 lane miles of concrete pavement, and could utilise US\$525,000 worth of EdenCrete®, although use of EdenCrete® is not mandated. No contract for this project has yet been let.

GDOT State Funded Repair Projects

In Georgia, where EdenCrete® is specified in Georgia Department of Transportation (GDOT) specifications for State funded full depth concrete slab repair projects, GDOT has this financial year let contracts for, or has issued an Invitations to Bid (ITB) for 10 State funded highway repair projects that will utilise over US\$430,000 worth of EdenCrete®.

A further 10 GDOT State Funded repair projects that could involve the use of up to US\$440,000 worth of EdenCrete® still remain to be put to tender before the end of June 2018.

Projects with MARTA under consideration

Following a technical presentation, made during the quarter to the senior engineering staff at the Metropolitan Atlanta Rapid Transit Authority (MARTA) of the benefits delivered by EdenCrete®, including a review of the project undertaken in July 2016 with MARTA (see Eden announcement ASX: EDE 18 July 2016), a number of possible forthcoming MARTA projects are being considered by MARTA in which EdenCrete® may be used.

Atlanta, the sixth fastest growing metropolitan area in the US, has a current population of more than 7 million people that is expected to grow to 8 million by 2020.

MARTA is the primary public transport operator in Atlanta and operates a network of bus routes that link to its rapid transit system consisting of 48 miles (77km) of rail track with 38 train stations. It carries, in total, over 430,000 passengers per day, the sixth largest number of any US city. To cater for this growth, a number of alternatives for expansion are being considered, all of which could generate significant opportunities for the use of EdenCrete® in new. MARTA also undertakes a considerable amount of annual maintenance.

Relevantly, State funding, through the passage of a new sales tax to fund MARTA, has effectively doubled the amount of funding available each year for transportation projects to about US\$2 billion. In addition, this year's budget included a further \$100 million dedicated for transit projects, the largest state investment in transit in Georgia's history.

The broad level of interest that has been shown by the MARTA engineering staff in the benefits that EdenCrete® can deliver is very encouraging and it is hoped that this interest, coupled with the expansion of the MARTA footprint will translate into future projects.

Georgia Infrastructure Expansion

Dozens of major infrastructure projects across Georgia are either under construction or in the planning stages, in line with the State's long-range transportation plan, which has four main elements:

- Express lanes: GDOT is building a comprehensive network of express toll lanes on a number of highways. About 24 miles are already open, with more than 141 miles of additional express lanes across the region planned.
- Transit expansion: The region's transit network is expanding. MARTA is planning to add rail services and expand coverage in the city of Atlanta, while suburban systems are extending hours of operation.
- Improvements to major roads and interchanges are being made to address the region's worst choke points and improve safety. Highway interchanges are being rebuilt and dozens of major arterial roads are being widened.
- Multi-use trails: About 800 miles of new bicycle and pedestrian trails are to be built.

Colorado

Significant progress is being made in Colorado on a range of commercial and infrastructure projects, particularly in relation to applications requiring reduced permeability and abrasion resistance that help minimise problems resulting from the multiple freeze/ thaw events in each year, and the abrasive wear from snow ploughs and chemical breakdown of the concrete from application of de-icing salts and road chemicals to concrete road and bridge surfaces to assist in de-icing.

This results primarily from the weather conditions that exist in Colorado (and indeed in many other parts of the US that experience similar conditions). The US National Climatic Data Centre reports, for example, that Denver, a large and rapidly growing city situated 1,500m above sea level, annually experiences 300 days of sunshine and on average experiences 155 days when the daytime temperature reaches or exceeds 21 °C and 157 days when the temperature falls to 0 °C or lower.

Each year these conditions produce a very high number of freeze/thaw events, each causing water in the fine surficial cracks or held in micro-pores within the concrete, to freeze and expand, progressively propagating cracking through the concrete.

Lafayette Promenade/ CDOT State Highway 287 Project – First CDOT Project

EdenCrete® was purchased in February 2018 to be trialled in Denver against a competitive product, for compressive strength and abrasion resistance in the replacement exit lane from Lafayette Promenade and the inlet lane onto Colorado State Highway 287 (see Figure 1). EdenCrete® was trialled in dosages of 1 gallon (3.76 litres)/cubic yard (0.76 m³) of concrete and 2 gallons/ cubic yard of concrete.

The relative performances of EdenCrete® and the competitive product (which involves application of a surficial coating to the concrete) are both being assessed in laboratory trials (involving measuring the compressive strength and abrasion resistance) and visual monitoring of the actual performance in the field of both products over an extended period.



Figure 1. Lafayette Promenade/ CDOT State Highway 287 Project

In the laboratory trials of the concrete used in the project, at the times specified in the ASTM testing standards, both EdenCrete® mixes (with the different dosages of EdenCrete®), in all trials outperformed the reference concrete (i.e. the same concrete mix but without any EdenCrete®) and importantly, significantly outperformed the competitor (see Tables 1 and 2 below).

**Table 1.
Compressive Strengths (psi*)**

	2-days	7-days	28-days
Reference	2980	4250	5080
Competitor	3070 (3.02% better)	4160 (2.12% worse)	5290 (4.13% better)
EC @2 gpy**	3690 (23.83% better)	4950 (16.47% better)	6370 (25.39% better)
EC @ 1 gpy**	3470 (13.03% better)	4610 (8.47% better)	5950 (17.13% better)

* 1psi= 6.895 kpa ** 1gpy = 4.95 litres/m³

**Table 2.
Abrasion Resistance (measured as % mass loss)**

	28 Days
Reference	-7.2%
Competitor	-6.6% (8.44% better)
EC @ 2 gpy**	-4.6% (36.12% better)
EC @ 1 gpy**	-5.8% (19.44% better)

This is a highly encouraging start to an important field trial that gives EdenCrete® its first direct exposure to the Colorado Department of Transportation (CDOT) in a field trial of EdenCrete® in concrete used on a CDOT State Highway.

The concrete will be subject to the challenging climatic conditions that Denver experiences, the repeated freeze/ thaw events and the application of high levels of de-icing salts and road

chemicals which cause both scaling of the concrete and corrosion of steel re-bar in the concrete when the salt permeates into the concrete, as well as high levels of surface abrasion from the use of highly abrasive snow ploughs that are used after heavy snowfall.

Of relevance is the fact that the competitive product is only a thin surface coating, and will only provide benefits until it wears through this thin layer, after which the standard concrete (i.e. the Reference) will then be exposed and the usual, higher rate of wear unless a further coating of the competitive product is added, an expensive solution that would also be disruptive whilst being carried out.

The EdenCrete® is however mixed throughout the concrete and is an integral component that will continue to deliver superior benefits until all the concrete is worn away down to the sub-surface layer, a most unlikely event under normal operating conditions. Additionally, this field trial provides a very important extension to the earlier, previously announced follow-up field trials of EdenCrete® being undertaken by the Denver Public Works (see ASX: EDE 18 September 2017). These earlier trials are now well underway and it is hoped they will be finally assessed during the forthcoming northern spring/summer. To date the EdenCrete® enriched concrete has performed well in these earlier trials and if this continues, Eden is hopeful that it will result in a significant number of future orders from the Denver Public Works, which has a close relationship with CDOT.

Town of Gypsum Project

Eden sold to the Town of Gypsum EdenCrete® for trialling in concrete on the deck surfaces of four small golf cart/pedestrian bridges that span the Eagle River. The work at the golf course was completed in March 2018 (see Figure 2). The purpose of the trials is to assess the performance of EdenCrete® in various concrete mixes in respect to scaling, abrasion resistance, crack reduction, and overall durability (based on visual assessment).



Figure 2. Gypsum Golf Course Bridge Project

Based on these trials, the Town of Gypsum intends to select the concrete mix design, using EdenCrete®, to be used on a forthcoming traffic roundabout replacement project within the town of Gypsum on CDOT State Highway 6. Eden has also been advised that subject to satisfactory performance of EdenCrete® in this the roundabout replacement project, the Town of Gypsum is also considering using EdenCrete® appropriate applications in its Master Development Plan.

EdenCrete® was selected as the additive to be trialled to try and achieve a more aesthetic looking and longer lasting concrete, based upon its prior success with scaling, abrasion resistance and crack reduction.

The replacement of these four bridges is only a small portion of, and the beginning of the far larger project that the Town of Gypsum has been preparing for in their Master Development Plan that was finalized in 2017. This includes commercial (Town Centre and Business District redevelopment and new construction), infrastructure (curb and gutter, roadway and roundabout construction) and school construction projects to name a few. The budgeted expenditure to upgrade and expand the school system alone accounts for US\$200 million of the Master Development Plan's total budgeted expenditure.

These projects and trials of EdenCrete® being undertaken with the Town of Gypsum represent a very significant potential opportunity for Eden to greatly expand its footprint in the US infrastructure market.

Town of Vail - West Vail Roundabout Concrete Repair project

Eden was contracted to supply EdenCrete® for inclusion in a traffic roundabout repair project that was installed in April 2018 in the resort town of Vail. Vail, located in the Rocky Mountains at an attitude of 2,445 metres, is subject to difficult climatic conditions, experiencing significantly more snowfall than Denver and is subject to a far greater usage of snow ploughs, studded snow tyres and chains along with very heavy applications of de-icing salts and road chemicals.

The total US\$350,000 repair project, known as the West Vail Roundabout Concrete Repair project, involved the removal and replacement of the concrete approach slab within the West Vail south roundabout (in which EdenCrete® was added) on State Highway 6, concrete patch repair of the bridge deck, removal and replacement of the concrete sidewalk under Interstate Highway I-70, and the removal and replacement of stone veneer under I-70.

The concrete in the roundabout that was replaced had been subjected to harsh abrasion, exacerbated by studded snow tyres and chains. EdenCrete® was selected to provide scaling/abrasion resistance and crack reduction.

This Vail project, although only small, is a further EdenCrete® project that is considered likely to be relevant for future consideration by CDOT and represents further continued penetration by EdenCrete® into the US infrastructure market.

New Factory Floor Project in Colorado

In February, Eden received an order from a commercial customer for approx. US\$11,000 worth of EdenCrete® for a new concrete factory floor (see Figure 3 below).



Figure 3. New factory concrete floor being poured

The project was completed with delivered EdenCrete® delivering greater strength, abrasion-resistance and toughness, together with a smoother, less permeable surface, accompanied by positive wet properties. This resulted in Eden securing a further contract from the same customer for use of EdenCrete® in the flooring of a second, adjacent building.

NCDOT Bridge Trial

A bridge trial with the North Carolina Department of Transportation (NCDOT) of EdenCrete® has been scheduled to occur in the next few months.

The intention of NCDOT is to include and test EdenCrete® in half of the items of the bridge that are to be replaced, with the other half to be made with standard concrete. EdenCrete® will be tested in a number applications including barrier rails, and the approach slab.

This is a further significant development in the marketing progress of EdenCrete® as it represents the fourth State in the USA (after Georgia, Texas, and Colorado) where a DOT will have trialled, or is using or permitting the use of EdenCrete® in infrastructure projects.

Most relevantly, North Carolina is a potentially very large market for EdenCrete®. In 2015, in a report on the state of repair of the roads and bridges across all States of the U.S., the Federal Highway Administration reported that of the 18,168 bridges in North Carolina, 5,534 (or 30.5%) were structurally deficient or functionally obsolete^{1*}.

1* DOT Fact Sheets Highlights Grim State of U.S. Roads and Bridges – 9 July 2015

US State Departments of Transportation Approvals

During the quarter Eden received approval for the use of EdenCrete® from the Department of Transportation in Oregon.

EdenCrete® is now approved and in commercial use in both Georgia and Texas, and approved for the use in one or more applications by the Departments of Transportation in 9 other States of the US (as shown in dark grey or black on Figure 4), including Colorado where EdenCrete® is being trialled of a CDOT roadway, representing approximately:

- 25% of the total US population;
- 39% of the total US land area;
- 36,294 bridges that are structurally deficient or functionally obsolete*; or

- 26% of the total number of such bridges in the USA*.

* DOT Fact Sheets Highlight Grim State of US Roads and Bridges – 9 July 2015

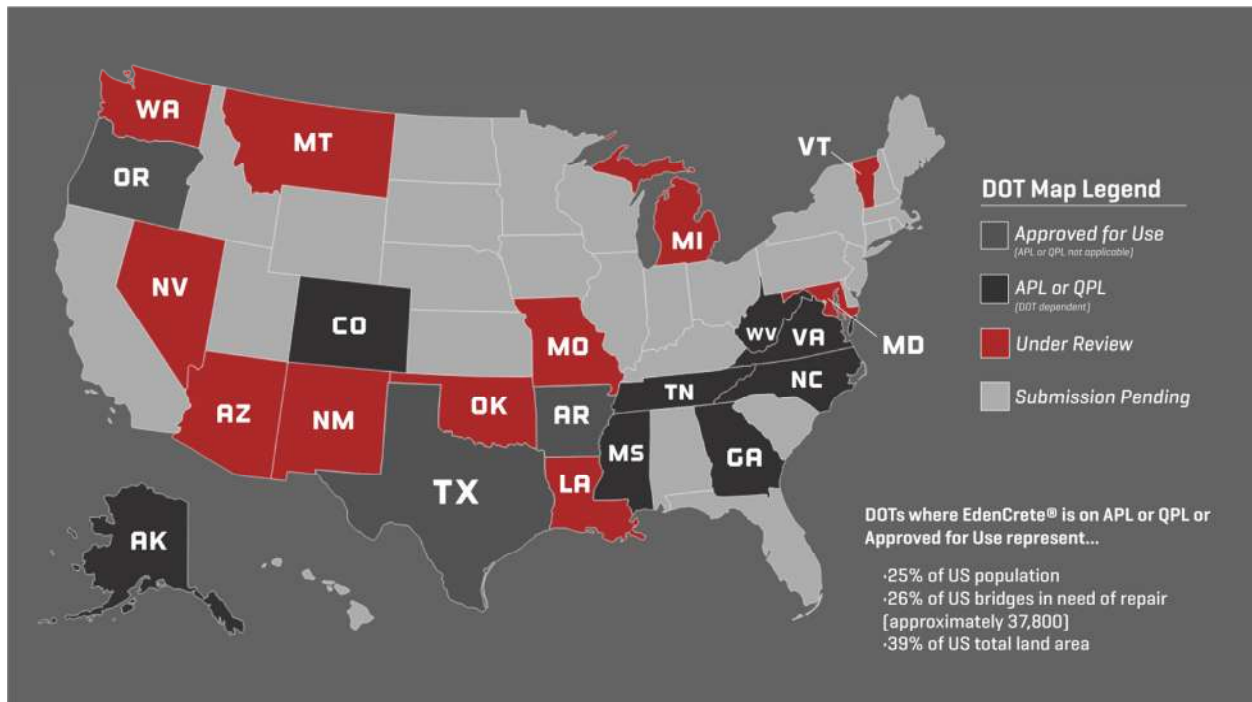


Figure 4. Map of USA showing current position of DOTs Approval

Applications for approval of the use of EdenCrete® have also been lodged in 11 other US States (shown in red on Figure 4) and submissions are also planned for the other States that do not exclusively require the NTPEP testing to be completed.

EdenCrete® is a Type S admixture. Each DOT handles Type S admixtures differently. Some have them on their Qualified Products List (QPL) or Approved Products List (APL). QPL and APL mean the same thing, but different states use different nomenclature. Conversely, the State may choose not to have Type S admixtures on the QPL or APL and may simply allow them to be used on a project-by-project basis or mix design approval process. That is what the Oregon DOT has chosen to do, which is similar to both Texas DOT and Arkansas DOT.

In Georgia, EdenCrete® is approved for use in State funded GDOT 24 hour full depth slab replacements mix and is included in the GDOT specifications for full depth slab replacements. In addition the US Federal Highway Administration (FHWA) has now approved the use of EdenCrete® in concrete used by the Georgia GDOT in repair projects in Georgia that are partly federally funded (and to which FHWA contributes 80% of the costs). EdenCrete® is also undergoing a 12 months' field trial for new road construction that could continue for up to 12 months from April 2018.

Eden anticipates that the initial FHWA approval for use in the repair projects in Georgia may well help should future FHWA approval is required in any other state (where EdenCrete® is specified by name).

In Texas, TxDOT has approved the use of EdenCrete® in two proprietary concrete mixes used by a precast manufacturer of pre-stressed beams for bridges, in which EdenCrete® is used on a regular basis. Test work with a number of other TxDOT approved precast manufacturers has either been carried out or is also under discussion.

During the quarter, as described above, the first field trials on roads in Colorado including one involving CDOT occurred, and a bridge trial in North Carolina is also scheduled to take place in the next few months.

Eden is also discussing possible further DOT trials. This includes discussions related to possible DOT bridge trials of EdenCrete® in both Georgia and Virginia.

Korean EdenCrete® Trials

In June 2017, Eden signed a Memorandum of Understanding (“MOU”) with Korea Consultants International Co., Ltd. (“KCI”), a Seoul-based engineering consulting firm, to jointly review the feasibility of KCI being appointed as the sole distributor in the Republic of Korea (“Korea”) for EdenCrete®.

During the quarter, successful trials of EdenCrete® with Korean cement were undertaken in Colorado. The chemistry of cement used in Korea is somewhat different from cement manufactured in the US and Eden undertook the test work in Colorado on three different brands of Korean cements in an effort to increase each of their responses to EdenCrete®HC and EdenCrete®Pz. In the same way that Eden solved the issues with pozzolanic cements that led to the development of EdenCrete®Pz, Eden achieved encouraging progress with these trials with Korean cement, and since the end of the quarter, Eden has undertaken EdenCrete®HC and EdenCrete®Pz trials in Korea with the Korean cement. The early strength results (after 24 hours) from these trials in mortar paste are showing encouraging improvements. If these results continue and translate into similar improvements in concrete, this could open up a significant market in Korea.

The current MOU signed between Eden and KCI is non-binding and preliminary, and depending upon the progress and outcomes from these tests and further discussions with the relevant government bodies, Eden and KCI intend to negotiate the possible appointment of KCI as the exclusive distributor of EdenCrete® in Korea, a country of over 50 million people that is a major user of concrete for both high rise construction and infrastructure.

Laboratory trials of EdenCrete®HC and EdenCrete®Pz

Laboratory trials, both in a number of independent US laboratories in different States, and also at Eden’s own laboratory in Colorado, and underway to test the new products for various commercial applications using regional cements from across the USA and widely used commercial mixes. These trials will test up to eight different performance characteristics including compressive strength, flexural strength, split tensile strength, abrasion resistance, modulus of elasticity, shrinkage, permeability and scaling.

This wide range of testing, will provide significant data that will assist our sales team in marketing our products across the US. The response of different brands of cement to EdenCrete®, due to subtle chemical differences, can be different and this may necessitate variations in the design of suitable concrete mixes.

Commercial trials

A number of commercial trials of EdenCrete®, EdenCrete®HC and EdenCrete®Pz for various commercial and infrastructure applications are also underway or planned in various States. These include commercial trials of EdenCrete®Pz in pozzolanic concrete mixes in a number of

States where these mixes are widely used in a number of applications including high-rise construction.

NTPEP Certification Testing of EdenCrete®HC and EdenCrete®Pz initiated

The applications to commence the NTPEP Certification Testing of EdenCrete®HC and EdenCrete®Pz were lodged some time ago and the product has been supplied for the trials, but the commencement of these trials was delayed due to the prior workload of the independent testing laboratories, and the 12 months' testing is now anticipated to start in the immediate future.

The separate ASTM testing of EdenCrete®Pz that has already commenced is progressing well, with positive results having been received to date.

EdenCrete®HC

EdenCrete®HC is a higher concentration (double strength) version of EdenCrete® that produces performance levels equivalent to at least twice that of the standard EdenCrete®. It retains the same chemistry as EdenCrete®. However, as only half the volume for at least the same performance improvement is required, it results in greatly reduced transport and storage costs, and a net overall higher value product per gallon. As a consequence, it will be sold at a price that will enable customers to achieve at least the same performance level as from the standard EdenCrete® but at a significantly lower effective price per cubic yard of concrete than they can currently achieve with standard EdenCrete®.

EdenCrete®Pz

EdenCrete®Pz is a new product that Eden developed that is compatible with concrete that includes pozzolanic cements, which the original EdenCrete® did not greatly assist. EdenCrete®Pz significantly expands the market for EdenCrete® products. Pozzolanic concrete is a high strength alternative form of concrete that is used in a variety of applications, such as pre-cast concrete, high-rise and general construction, large industrial concrete structures such as bridges and dams, and marine settings. Pozzolanic concrete is based on using pozzolanic cement as a replacement for portion of the standard cement (Ordinary Portland Cement, or OPC) in the concrete formation process.

On- Going Joint Research Projects

High strength CNT enriched concrete requiring little or no reinforcing steel

The three-year research project with Deakin University ("Deakin"), partly funded by an Australian Research Council ("ARC") Linkage Grant, into ultra-high strength carbon nanotube enriched concrete requiring little or even no reinforcing steel, continued during the quarter.

This project offers Eden a great opportunity to collaborate in world-leading, high level research into how its EdenCrete® carbon nanotube enriched concrete admixtures affect concrete at a nano-scale.

This research could potentially lead to both the improvement of the EdenCrete® products and the development of ultra-high strength concrete that requires little or no steel re-enforcing. Quite apart from the enormous environmental and financial implications that such an outcome would have, it also has major implications for the global construction industry

EdenPlast™ / CNT Enriched Polymers and Plastics

The jointly funded research project between Eden and the University of Queensland ("UQ") in Brisbane for the development on a new method for producing carbon nanotube ("CNT") enriched thermoplastic composites, continued during the quarter, focussed on attempting to bring this project to commercialisation as soon as possible.

This project was awarded a Linkage Research Grant worth A\$310,000 by the Australian Research Council ("ARC") that is payable over three years to help meet part of the costs, and to which project both Eden and UQ also contribute.

As previously advised, at a laboratory scale, preliminary trials by UQ produced a 50 per cent increase in stiffness of polypropylene and an increase in electrical conductivity with the addition of CNT.

This new project aims to unravel the mechanisms by which these outstanding property improvements are achieved and to scale up the process to an industrial level. The targeted outcomes are economical, lighter and stronger plastics for manufacturing applications such as rotational moulding, transport and electronic packaging.

OPTIBLEND® DUAL FUEL SYSTEM (EDEN 100%)

OptiBlend® Receives GreenPro Certification

During the quarter, the OptiBlend® dual fuel system received GreenPro certification in India from the Confederation of Indian Industry. GreenPro certification assesses how green (i.e. environmentally friendly) a product is, based on a holistic product life approach.

OptiBlend® kits allow for up to 70% of diesel fuel to be displaced with natural gas, reducing greenhouse gas emissions as well as particulates and other environmentally damaging emissions, whilst also reducing fuel costs when natural gas is cheaper than diesel fuel.

India suffers from amongst the highest levels of air pollution in the world, causing great health problems for its 1.2 billion people, and the Indian Government is trying to reduce emission levels by various means, including granting developers of green buildings, incentives such as planning concessions and priority in securing the connection of essential services and road access.

In consequence it is anticipated that the GreenPro certification will greatly assist in marketing OptiBlend® in India where millions of diesel gensets are already installed. They are currently used in most large residential, commercial, industrial and governmental buildings throughout the country for either base load or back-up power. They are also installed in most significant new buildings that are built.

Utilizing a GreenPro certified dual fuel kit will assist owners and developers in achieving national and international green building certification. Further, green infrastructure architects, developers, corporate bodies and consultants generally prefer to adopt green certified products in their projects, both of which points are anticipated will assist in the marketing of OptiBlend® in India.

GreenPro certification has been accredited by the Global Ecolabelling Network ("GEN") which is a not-for-profit association, founded in 1994 to help improve, develop and promote ecolabelling, and all members must meet requirements including following ISO14024. GreenPro certification being accredited by GEN means that it will now be easier to achieve similar certification of OptiBlend® in the other 26 GEN member countries.

OptiBlend® Sales

During the quarter, Eden Innovations LLC, Eden's wholly owned U.S. and Indian subsidiaries, received orders for Optiblend® kits and parts to the value of US\$69,000.

Optiblend® Background

Eden has developed an efficient dual fuel system that is capable of operating on diesel engines and displacing up to 70% of the diesel fuel with natural gas. If Hythane™ fuel (hydrogen enriched natural gas) is used in place of natural gas the displacement of diesel fuel could be as high as 80%. The use of the natural gas greatly reduces greenhouse gas emissions and, in where natural gas is cheaper than diesel fuel, will also reduce fuel costs. It has significant market potential particularly in the diesel-powered generator set ("genset") market.

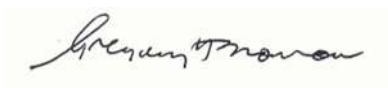
CORPORATE

PLACEMENT

During the quarter, Eden completed a placement to institutional and sophisticated investors, of approximately 57,502,997 ordinary shares at an issue price of 11 cents per share, to raise approximately A\$6.325 million (before the costs of the issue).

OPTION EXERCISES

During the quarter, Eden raised A\$1.65 million during the quarter from the early exercise of EDEO options.



Gregory H Solomon

Executive Chairman

For further information, please contact Greg Solomon (+61 8 9282 5889) or visit our website (www.edeninnovations.com)