RE:SOILSTONE™

A ONE-SUSTAINABLE- SOLUTION

FOR

floods, soil erosion, bushfire, drought, river-to-ocean debris, disaster losses

Presented by: EDGAR AREVALO AGDA (Consulting Engineer, Entrepreneur)

Cost Benefits & Value Added Waste-to-Resource Product and Structures:

- Re-engineered in-situ soil technology and recycling
- Re-engineered plastic/tyre waste to Soilstone reinforcements
- RE:Soilstone terrace embankment and buttress earth walls
- Re-channeling at upstream source by terrace detention
- Re-newable water farm development
- Re-duction in land based ocean debris
- Re-duced climate and environmental hazard and risks
- Reduce construction and development cost

...but what is Soilstone™?

Sustainable recycled waste aggregate and soil materials with reinforcement of recycled plastic/tyre for Soilstone engineered earth structures

What is Soilstone™?

- **a sustainable infrastructure system for water resource and land conservation development**.
- an innovation in earthworks from improving loose soil and rocks to **engineered stone with reinforcement**.
- sustainably **recycles demolition waste aggregate materials** and **uses processed recycled material for reinforcements** (recycled plastic and tyre) to strengthen infrastructure.
- Bulk waste material of eroded soil and plastic/tyre recycling for infrastructure use in water supply, climate-environmental risk mitigation
- Sustainable structure use in soil erosion, mud-debris flows and contaminated soil flows on the river ending at the ocean

Our research technology history highlights

1992-1993

Pinatubo explosion: **volcanic waste was used in all the concrete plate walls to construct a 5 storey building**. Part of it is made out of recycled plastic waste as part of the formwork system.

2012-2013

Waste soil and waste construction aggregates engineered with plastic reinforcement test case in retained earth, engineered fill, soil erosion control, engineered soil foundation.

2013 Accepted as BCA alternate solution ; IP documentations 2016-2022

2021-2022

Recycled Waste plastic reinforcement and storage blox's for bulk rainwater harvesting technology improvement to Renewable Water Farm Development

A modern, sustainable way to build...

- **Decades of research to innovatively use in-situ material and water for preserving soil integrity and conserving water.**
- It is a **multipurpose solution for water and land-based infrastructures**, strong enough to mitigate environmental and climate risks for decades of agricultural use
- It also reduces overall environmental footprint when being used for construction:

sustainability matters
www.sustainabilitymatters.net.au

Semco
Equipment Sales

'SOILSTONE SUSTAINABLE COASTAL EMBANKMENT'
Soilstone's use of processed recycled plastic as a sustainable infrastructure system for water resource and land conservation development is a perfect example of outstanding focus in environmental and sustainability efforts.

sea WORK
ecm awards european commercial marine sea WORK
WINNER Maritime Sustainability Award
MARITIME SUSTAINABILITY AWARD

Soilstone™ for value-added waste-to-resource engineering

Products and Structures

RE:SOILSTONE™

How can we save money?

1 Infrastructure to 3 or more solutions

Multipurpose designs – a proposed detention pond to mitigate floods is used as infrastructure for water supply retention; irrigation, eco-tourism, livelihood ponds, development of new communities; agro-forestry and others

Re-using in-situ materials onsite

Reduce dependence on imported materials by re-engineering soil and gravel/rocks/boulders and other inherent material on site; including construction aggregate waste materials

Using recycled material for reinforcement

Recycled material is cheaper to obtain and environmentally sustainable; processed waste plastic and tyre are designed with other reinforcement type in structure engineering.

How can we save money?

Reduce land development cost; reduced hauled material and energy consumption

Sustainable development for private farm and government lands before gullies, creeks and river channels, waste lands, flood plain area; Unused slope and difficult areas; areas prone to disaster

Mitigating erosion by building embankment for water retainment is a sustainable long-term permanent solution and investment, mitigating climate and environment risks including ocean health

Addressing soil property establishes a good foundation for strong, long-standing infrastructure;

Simplifying the design; Saving time; Saving costs

Mass earth structures that are simple and other buttressing elements and anchoring system can be delivered on time and on budget

How can we save money and contribute in making our oceans clean and healthy?

Shorter construction time

Simplified construction methods will reduce overall associated construction costs on available bulk on site material; and the use of recycle waste plastic /tyres as reinforcement

Use local labour and engineering supervision

Simplified method means provision for local employment and give benefits to community development as opposed to typical contract works agreement; more involvement of communities

Reduce environment and climate risk

Building engineered embankments at farmland sustainable assist farmer for their water and access needs; reducing flooding and soil erosion downstream and reducing ocean debris at the river that goes to the oceans.

Soilstone™ for sustainable, long-lasting infrastructure

Sustainable 1000-2000 cum of rainwater harvesting per hectare between rain events assist farmer for their irrigation water, mitigating erosion, providing access and other livelihood use; while reducing in volume water downstream community on flooding, mud-debris flows along the rivers and into the ocean.

RE:SOILSTONE™

How can we build better and economically ?

Lower value of material permeability to a cut-off retention means more harvested water

Binding strength and reinforced strength reduce seepage or water flows through soils preventing settlements, erosions needed for water retention and channelling

Bonded and improve in-situ soil materials means less soil erosion and mud flows to the rivers

Engineered and reinforced soil-to-stone:

- Foundation strength
- Shear strength against slide or landslip
- Strength against erosion

Bulk recycling of plastic by communities on added value to waste plastic;

More embankment means more use of recycled waste plastic reinforcement and use for structure anchoring.

Value for waste, means more people getting involved on livelihood and food production on harvested water.

How can we build better?

Below ground cut-off walls

Mitigating underground seepage flows use to mitigate erosion effectively for water retention; and use effectively for flood levee erosion

Greater tensile and torsional strength

Sustainable use of processed plastic waste and/or tyre with high strength strand provides tensile, binding and anchoring strength of the soilstone mass structure; addresses corrosion issues of conventional reinforcements

Simplified construction methodology

Mass infrastructure system provide simplified design and specification that requires simplified construction methodology, which leads to more productivity and quicker construction

How can we build better?

Repair and maintenance using the same material

In-situ and on-site materials is economical not only during construction but also in maintenance and repairs; not involving complicated added materials and equipment plus supervision.

Repeatability of system over large tracts of land

Simplicity of methodology means sustainable and repeatable system that can be adapted to other areas

Build anywhere that needs infrastructure

In-situ and on-site materials means applicability of the soilstone infrastructure in other location for specific use and function;

Thus:

Soilstone is applicable to even developing and poor communities and problematic locations

Thank you

(see attached illustrations)

For more information, please contact

EDGAR AREVALO AGDA

E:

P:

A: NorthRocks Sydney NSW 2051 Australia

RE:SOILSTONE™

Australian Government
IP Australia

Official Receipt

PO Box 200 Woden ACT 2606 AUSTRALIA Tel: 1300 651 010 ABN: 38 113 072 755

This is your official receipt. We recommend that you print or save this page and retain it for your records.

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Prefiling Number SPEC-0004804749

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Attachments

PREFILING NUMBER	TYPE	FILE NAME	SIZE
SPEC-0004804749	PCT Request	Form PCT_RO_101 - 765 (EAA - Reservtank).pdf	524KB
SPEC-0004804749	Description	765 PCT DESCRIPTION (EAA - Rainwater Harvesting).pdf	92KB
SPEC-0004804749	Claims	765 PCT CLAIMS (EAA - Rainwater Harvesting).pdf	16KB
SPEC-0004804749	Abstract	762 ABSTRACT (EAA - Rainwater Harvesting).pdf	49KB
SPEC-0004804749	Drawing	765 PCT Drawrings (EAA - Rainwater Harvesting) - BW.pdf	1193KB

PATENT COOPERATION TREATY

PCT

From the RECEIVING OFFICE

NOTIFICATION OF THE INTERNATIONAL APPLICATION NUMBER AND OF THE INTERNATIONAL FILING DATE

(PCT Rule 20.2(c))

Date of Mailing **28 April 2021** *(day/month/year)*

Applicant's or agent's file reference
765 PCT (EAA-RESERVTANK)

IMPORTANT NOTIFICATION

International Application No.	International Filing Date *(day/month/year)*	Priority Date *(day/month/year)*
PCT/AU2021/000035	21 April 2021	21 April 2020

Applicant
EAA RESEARCH ENGINEER PTY LTD

Title of the invention
RAINWATER HARVESTING ASSEMBLY AND SYSTEM

Name and mailing address of the receiving Office	Authorised Officer
AUSTRALIAN PATENT OFFICE IP Australia PO Box 200 Woden, ACT 2606 E-mail address: pct@ipaustralia.gov.au	PCT Administration Officer Telephone No +61-2-6222-3626

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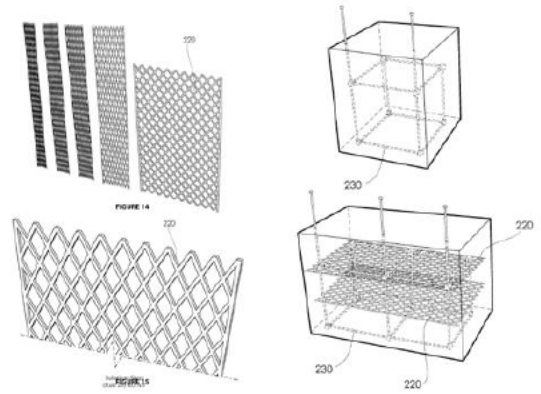


FIGURE 14

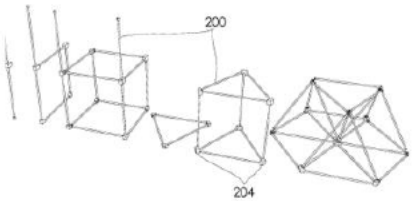


FIGURE 10

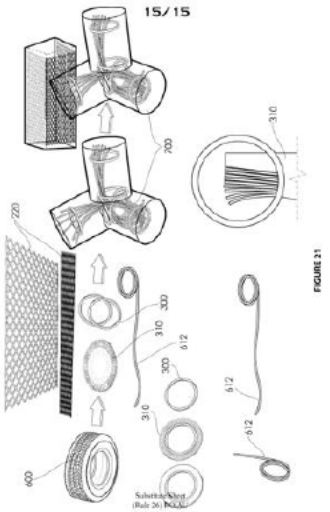


FIGURE 21

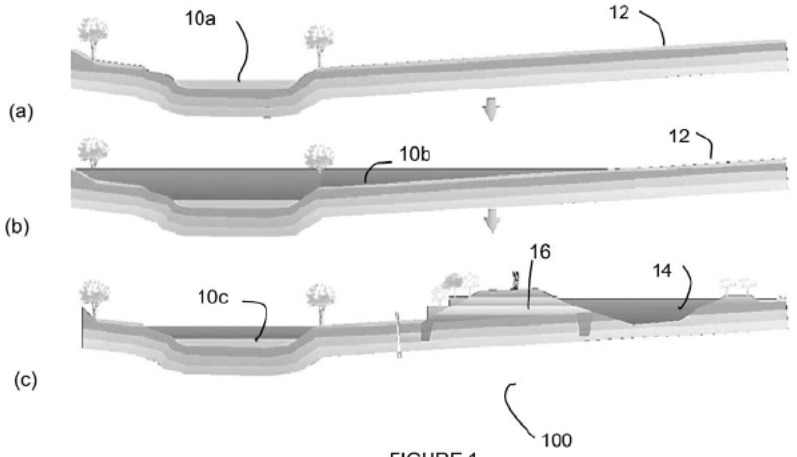


FIGURE 1

NSW GOVERNMENT | Land & Housing Corporation

Level 1, 222-239 Liverpool Road
Ashfield NSW 2131
Tel: 02 8753 8000 Fax: 02 87538888
ABN: 24 960 729 253
www.housing.nsw.gov.au

Our Ref: HOG13/61730
5th November 2013

A7BS - Alternate Building System
T/A DIB Developments P/L
1 Smiths Avenue
Hurstville
NSW 2220

Attention: I

Dear Sir

Expression of Interest (EOI)
Alternate Building Systems
LHC1/2013

Thank you for the submission in response to the above EOI that closed on 12 September 2013.

Based on the information provided, the following product has been assessed and accepted for inclusion in the "*List of Suppliers Offering Alternate Building Systems*".

- Alternate building and foundation system

The listing is valid for work in the following geographical areas as detailed in Schedule 4 of the Returnable Schedules.

- Sydney Metro

This acceptance will cease to be valid if the product specifications are changed and the products will be immediately removed from the List of Suppliers Offering Alternate Building Systems and the use of the product in Land and Housing Corporation (LAHC) properties will be suspended.

LAHC reserves the right to revise the requirements and assessment criteria for Alternate Building Systems. In case of such a revision, the product would be re-evaluated to determine its acceptability.

This approval does not guarantee any work to suppliers. The invitation for work will depend upon the needs and direction of LAHC's business. Opportunities for work will be via competitive tender for individual projects requiring compliance with project specifications and conditions of contract that may vary, to suit specific project objectives.

Further enquiries can be made by emailing Upali.mallawaarachchy@facs.nsw.gov.au

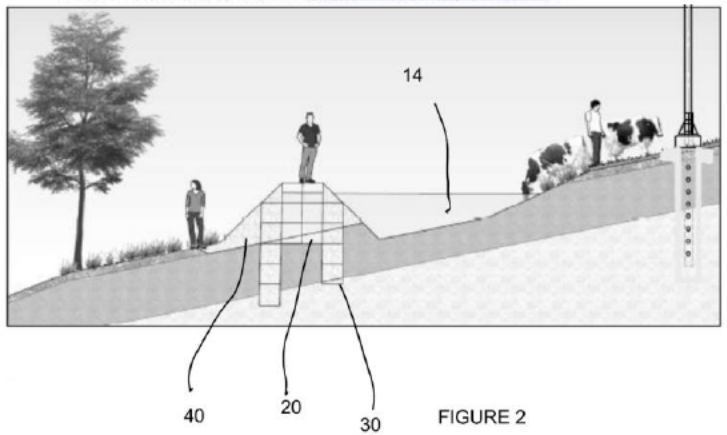


FIGURE 2

RE:SOILSTONE™

TECHNOLOGY APPLICATION OR TEST CASES
SOILSTONE GROUND IMPROVEMENT, BUTTRESS TERRACE WALLING, REUSABLE RE FORMPANELS

SOILSTONE TEMBANKMENT RETAINED 3.1 METER HIGH LANECOVE 2012

SOIL BASE STABILIZATION, THORNLEY NSW 2013

RETAINING WALL PROTECTION, CONDEL PARK 2013

YOWIE BAY NSW 2013 SOILSTONE

SETTLEMENT SOIL BASE STABILIZATION ILLARIE PL CASTEL HILL NSW 2013

SLOPE STABILIZATION- SOILSTONE TERRACE FRENCHS FORREST NSW DEC 2016

SOILSTONE FILL , NORTH BONDI DEC 2016

WEST PENNANT HILLS TERRACE BUTTRESS EMBANKMENT JUNE TO OCT 2016

SOILSTONE TERRACE GARDEN CASTLE HILL SEPT 2016

SOILSTONE AS WATER CHANNEL;
O DONNEL NORTH BONDI DEC201-FEB 16

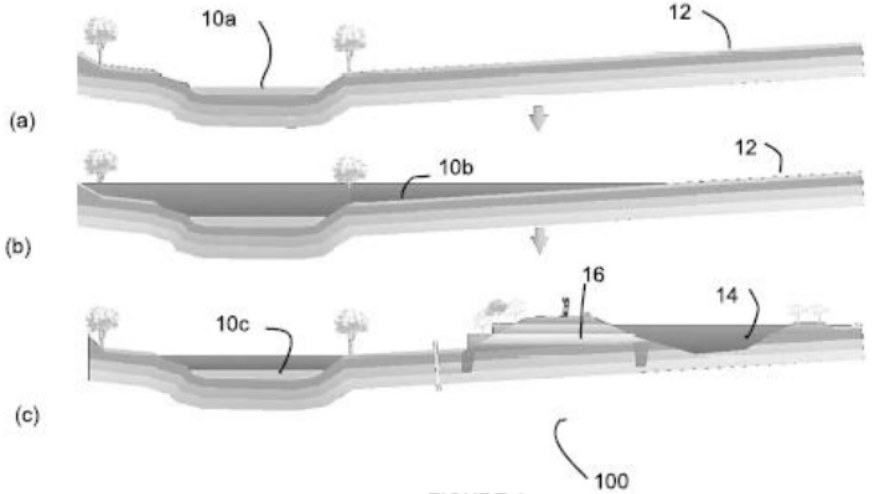


FIGURE 1

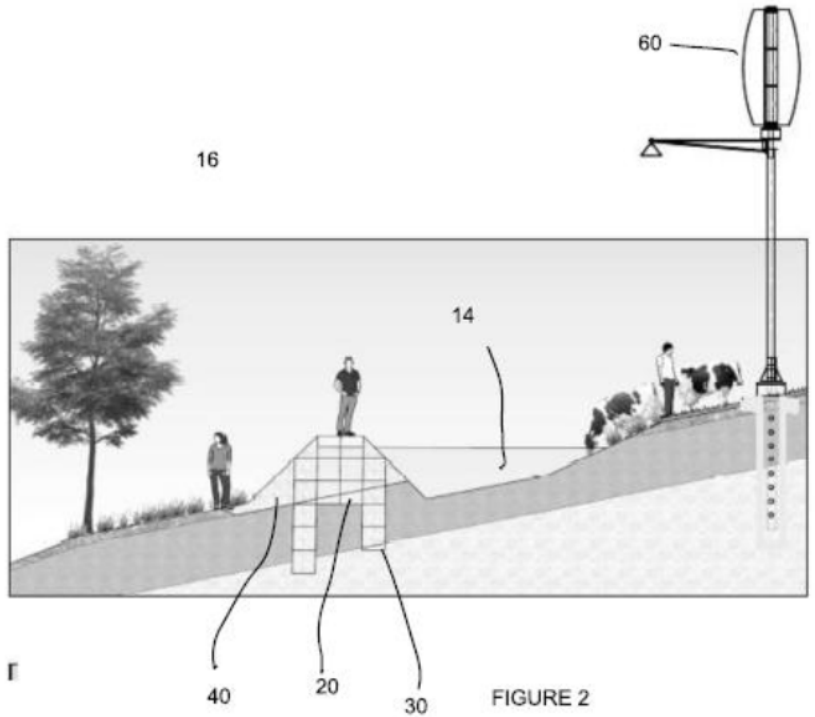


FIGURE 2

RE-CYCLED MATERIAL FOR SOILSTONE™ EMBANKMENT STRUCTURES

DEMOLISHED AGGREGATES

PROCESSED RECYCLED AGGREGATES

RE-FORM WORKS

SOILSTONE MIXED

- IN-SITU SOIL,
- AGGREGATES AND
- BINDER / CHEMICAL TREATMENT

AS AN:

ALTERNATIVE REINFORCED SOILSTONE™ EMBANKMENT

EQUIVALENT WAFFLE POD SLAB

WALL AND SLAB BASE PREPARATION PRIOR TO ACTUAL STRUCTURES

RESEARCH ENGINEER

SOILSTONE

WASTE SOIL, BRICK, CONCRETE .....

Constructions costs cut with on-site recycling

sustainability matters
www.sustainabilitymatters.net.au

Monday, 28 January, 2019 | **Supplied by:** Soilstone

Thanks to Soilstone technology, unwanted or excess soil material, demolished concrete and brick material can be engineered to form a mass-engineered soil structure for use and function on construction sites. The technology uses mechanical and natural chemical processes to treat native spoil to produce the properties of rock that can be formed into a structure. Instead of building foundations from purchased concrete, the natural site material is crushed together with additive chemicals that recycle the spoil into a durable and progressively hardening rock-like mass. The process has been tested, evaluated and approved by the NSW building regulator.

The engineered in situ soil and processed waste aggregates mix provides a simple alternative in ground improvement that minimises the use of material grading and compaction requirements, yet attains the properties of varied shear, compressive and bonded strength of stone. The process has been used successfully for mitigation of soil erosion, improved bearing capacity or subgrade reaction, improved resistance to water permeability and improved resistance to ground movement and vibration forces.

A major benefit of the site drainage design is the ability to form multiple drainage lines while retaining structural mass and stability. The environmentally sustainable material is moisture-impervious, meaning it can be used to form drainage and other structures in a way that would be difficult or more expensive than if using poured concrete. The material is also not prone to corrosion like steel.

The process is suitable for applications such as slope embankment stabilisation, buttressing to halt and remediate coastal erosion, complex construction, flood mitigation and management, and the prevention and repair of flood damage to buildings. It can also be used as an alternative material in waffle pods; foundation works retrofitting and stabilisation; road base materials; mine site erosion control; landfill contamination control; and other in situ ground improvement works.

https://www.sustainabilitymatters.net.au/content/waste/case-study/constructions-costs-cut-with-on-site-recycling-1293523475

LOW CARBON, LOW ENERGY
WASTE TO RESOURCE RECOVERY
MASS STRUCTURE DEVELOPMENT

SOILSTONE

ALTERNATIVE SOLUTIONS TO

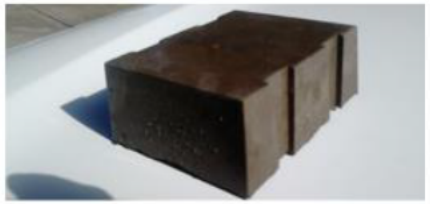
REPURPOSE OCEAN PLASTIC

Reducing environmental footprint

With Soilstone, we aim to reuse, repurpose and recycle already consumed 'waste' products to strengthen the properties of our structures. We want to build better and smarter to sustain our resources and reduce our impact on the planet.

Let's build strong and sustainable foundations for our future.

SOILSTONE
www.resoilstone.com
PCT Patent Pending



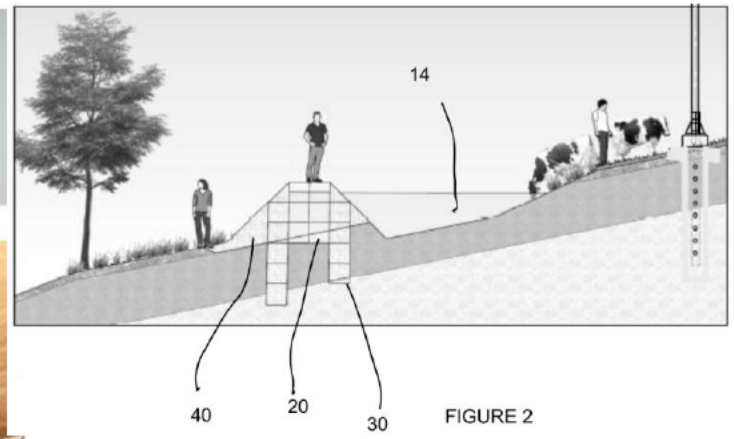
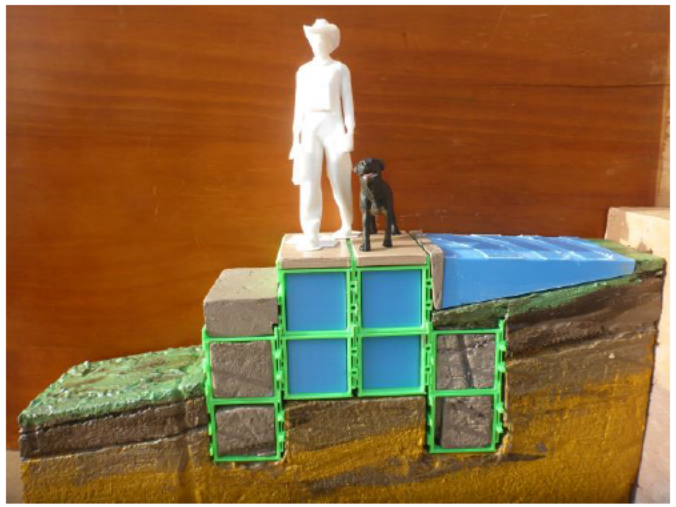
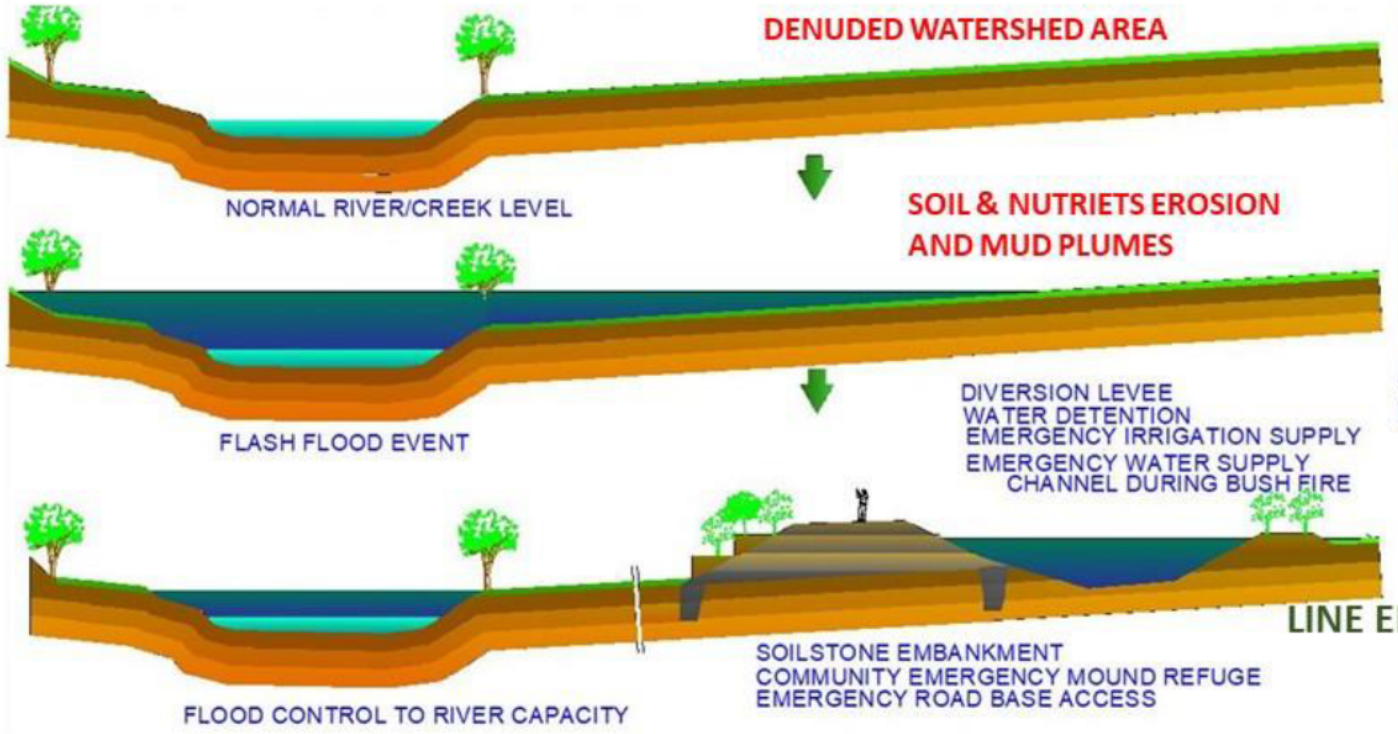


FIGURE 2



INNOVATIVE WATERSHED RAINWATER HARVESTING BY SOILSTONE "EMBANKMENT WATER BATTERY" STORAGE SYSTEM:



IN-SITU ON-SITE SOIL ENGINEERED EMBANKMENTS (SYLVANIA, 2018)

SOIL ENGINEERED DEEP CHANNEL (NORTH LANECOVE NSW-2012)

LINE EMBANKMENTS

BELOW GROUD CUT OFF WALL (PLUMPTON, NSW-2018)

GREEN TECHNOLOGY
GREEN SURFACE EMBANKMENT
(YOWIE BAY, NSW 2013)

- PER 1 HECTARE UPSTREAM LAND TO DETAIN 100-300M³ RUNOFF WATER FROM UPSTREAM CATCHMENT BY SOILSTONE EMBANKMENT ≈ 100-300M³ OF FLOOD WATER REDUCTION AT DOWNSTREAM
- 1MM RUNOFF ABOVE SOIL ABSORPTION CAPACITY ≈ 10M³ DETAINED WATER PER HECTARE; 10MM ≈ 100M³ OF STORED WATER PER HECTARE
- RAINFALL RUNOFF → DETAINED, RETAINED, DIVERTED AND CONSERVED

INNOVATIVE SUSTAINABLE INCREASED WATERSHED RAIN HARVESTING

ON SITE / IN-SITU

RE RESEARCH ENGINEER

SOILSTONE

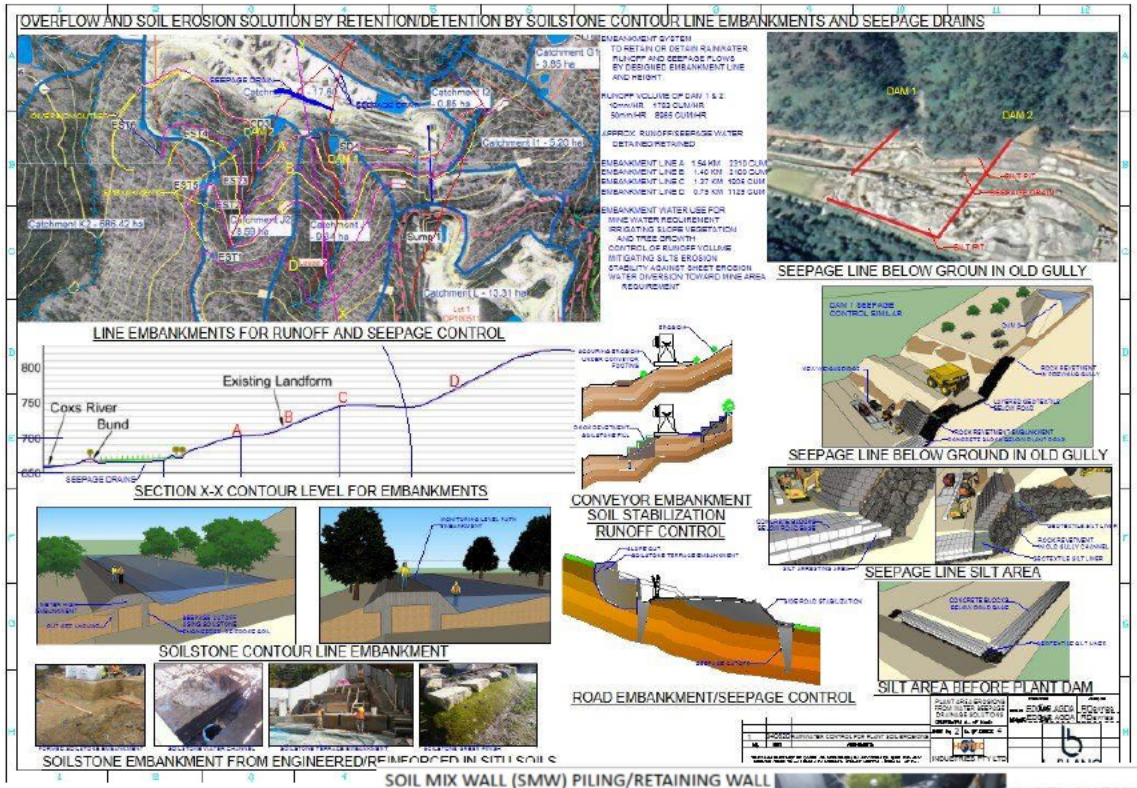
TECHNICAL AUDIT REPORT
T4 THEPARAK WINDFARM PROJECT
KRONE ONE:WIND ENERGY HOLDING
ALE HEAVYLIFT BOP CONTRACT WORKS

Hardstands, Road Accesses and Drainages

Design, construction and performance of the completed works and its recommended repair works

(30 December 2018)

RE:SOILSTONE™



A SUSTAINABLE ONE-SOLUTION for flood, soil erosion, drought, bushfire, river-to-ocean waste plastic/debris and disaster losses

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Renewable Water Farm Development Business Proposal

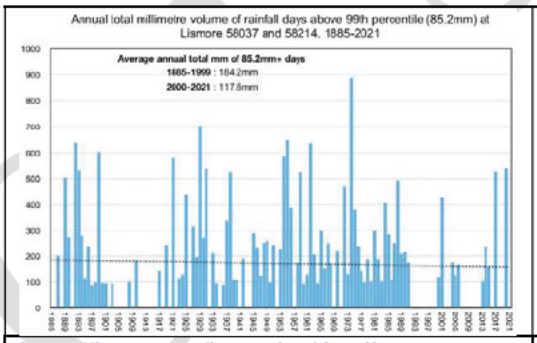
Presenter: **Edgar Arevalo Agda**
Consulting Engineer (EAARE/RESoilstone), Entrepreneur
E: M

A. Flood problems in brief

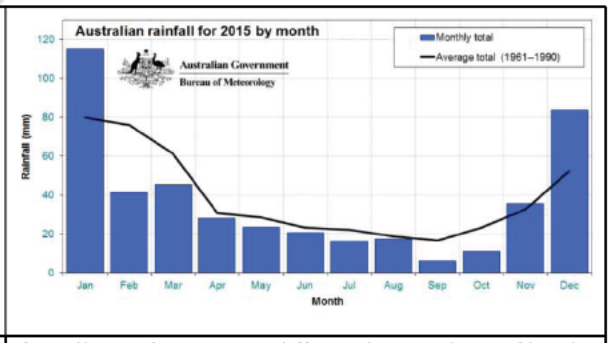
- Flood, soil erosion, drought, bushfire, ocean waste plastic and debris had one common relationship-water.
- Flood is that part of rainwater runoff overflowing the limited capacity at the downstream river channel affecting communities; Drought is the insufficiency of stored rainwater to supply for human needs; Bushfire require sufficient water-on-demand at a certain fire-ravaged area; Soil erosion and mud/debris flows are associated with overland flows due to runoff rainwater exceeding soil strength and capacity; Ocean pollution and debris including waste plastic out of the mud/debris flows from the river
- Flood had three major factors: a) the intensity or volume of rain to a catchment in a short period of time, b) the limited capacity of the river channel to handle the bulk catchment flow, c) meandering river with obstruction debris and eroded soils reducing the river cross section slowing the river flows to a rising water
- The need to improved managing and stewardship of rainwater provision from its (6940sqkm) large-area of catchment source passing through downstream communities like Lismore is the key in addressing flood mitigation

B. Long term solution to repeated flooding

- Mitigating the problem of downstream floods from the upstream runoff catchment.
- Helping the farmers at upstream catchment area to detain/retain designed volume at their farmland will mitigate the immediate rush of runoff water at the downstream rivers and communities
- Reoccurring flood events in history indicates the need of a long-term solution. A solution that deals with the major factors of flooding stated above.



https://ipa.org.au/ipa-today/the-disaster-at-lismore-some-rainfall-statistics



http://www.bom.gov.au/climate/current/annual/aus/2015/

- Reducing the volume by detention and retention at the upstream government and private farm lands (e.g. 1000 to 2000cum of rainwater per hectare) controls both runoff and the soil erosion/debris
- The larger percentage of private farms and government lands designed for the catchment system, the greater the control of the volume passing through the river channels.
- A catchment system, can be use by farmers for their irrigation between rain events particular the dry months; the same design of a system in use of the stored water for the bushfire events at government-private farm areas.
- A catchment and storage system for a river flow control on flood mitigation and sustainable water for farmers productivity and government ready water for bushfire; soil erosion/debris control for river and ocean health.
- Planning and design of catchment based on average monthly rainfall as well as above record using water diversion, transmission and upstream overflow detention system

Upstream Rainwater catchment and storages using furrows and ridges (PS6510):

EAARE-Soilstone™ innovation in water embankments, soil engineering, water catchment, plastic reinforcement, storage Blox's

- Re-engineered in-situ soil, recycled waste plastic reinforcement (a composite soil-to-stone reinforced mass earth structure) for:
    - Detention/Retention embankments for bulk rain water catchment (e.g., 500-1000 cum per hectare); the more farmland catchment the bigger reduction in flood water volume downstream.
    - Rainwater catchment for diversion, transmission and local (2-3.5KV) renewable energy (vortex generator) for farm water supply
    - Stable soilstone footpath for farm access; access for bushfire load reduction and management
    - Erosion control and bulk mudflow at the embankments
- Storage BLOX for bulk water storage and waste water tank application

a) Comparative solution
- One embankment system to address flood mitigation, drought, bushfire, soil erosion, river/ocean waste mitigation
- Farm productivity solution at the upstream rainwater runoff and soil erosion control as compared to passive infrastructures at the downstream communities
- Farmers and local people involvement in the flood mitigation works due to water interest as well as job for the local community; as compared to a single or few contractor/s works at the downstream flood prone communities
- On site use of engineered reinforce soil-to-stone is long term economical as compared to increasing levee height and repeated river dredging
- Farmers involvement in embankment for their farm water needs, as compared to expensive maintenance works downstream changing heights levee and dredging

b) Productivity for upstream while risk mitigation at downstream communities
- Farmers and communities in demand for sustainable water resource for livelihood and productivity
- Communities seeking economical solution on waste plastic, flood, mud flows, drought, water shortage

c) Early adopter plan
- Recent NSW floodings due to water volume in short period leads to flooding, soil erosion and massive mud-debris with plastic discharge to the oceans.

d) Planned opportunites.
- On-going collaboration of the technology with overseas contact on a project for bulk water harvest to a city with water shortage problem for decades
- Marketing to local farmer and governments for flood mitigation presentation

e) Issues of levees and modelling
- Embankment structure for catchment managed by farmers and government are big physical solution as compare to a works based on river flood modelling (a simulation or forecasting) where a different than predicted factors or input in computer modelling were always a big surprise catastrophe to decision makers and community leaders.
- Earth levees have advantages to a predicted level but water pressure and soil erosion/mud flows changes river levels resulting to costly dredging and repeated maintenance. (https://emilms.fema.gov/is_0280/groups/22.html)
- Earth levees are good when are properly build and maintained but catastrophic to communities when breach by erosion due to pore water pressure (e.g. https://californiawaterblog.com/2016/03/13/using-game-theory-to-encourage-cooperation-in-levee-system-planning/
- Long term permanent solution as compared to costly repeated river bed dredging and levee height increasing
- Limitation of resources and funds using massive concrete-base structures
- Plastic recycling products focus on particular product with or limited applications

f) Productivity to farmers, revenue and saving to the governments
- Income for store harvested rainwater as commodity revenue.
- Revenue in recycled waste plastic products and structure works
- Savings on cost of repair works spending after future reoccurring flood events; and the use of funds for productivity for the farmers and affected flood prone communities
- Productivity for farmers means more revenue for the government.

g) Community benefits out of farm productivity
- Jobs for more people getting involve out of waste-to-resource material use, the more people and community involvement in collecting and segregating waste plastic as an exchange for product that will assist them in their necessity and livelihood. This means bulk mitigation by more people into control of waste material.
- Increase productivity means increases commodity supply (water, food…) leading to lower cost
- Lower cost of energy on gravity drip irrigation as compared to cost pump water.

1. Innovation and Technology Traction
    a) Customer validations

    Soilstone's technology development and application in test-case small projects since 2012 till 2021:

    - Small test-case development projects completed works with collaboration with builder/contractor
        - 2012 Lane Cove NSW property: 3.0-meter-high vertical soil embankment of engineered waste soil and added layers of plastic mesh, around a damp problem basement parking. Creating a slim water channel to mitigate build up against the wall
        - 2012 Castle Hill NSW: Terrace embankment of unused sloped rear property land for a livelihood gardening; stabilization technique against soil erosion, and defective decking
        - 2012 Thornley, NSW: Use of Soilstone to engineer existing muddy soil from hazard level while creating a soil-stone water channel to divert runoff water damaging property structures
        - 2013 Yowie Bay NSW: Soil erosion mitigation and water impound embankment, water channel out of engineered reinforced soil using plastic
        - 2016 Bondi NSW; sustainable use of on site sand for a stabilized level engineered fill mitigating erosion toward the beach
        - 2016 French Forest NSW; Converting unused, unsafe and soil eroding rear property to a terrace soil-stone garden while channeling runoff water for a proper drainage system
        - 2018 Sylvania NSW; bigger test case work application in slope terrain property featured as Sustainability Australia on soil and aggregate waste to engineered embankment as base foundation for building structures,
        - 2018 Plumpton NSW, The use of Soilstone technology to fix age care facility church building soil foundation problem and flooding due to runoff flow. Cut off soilstone drainage diversion had mitigated the area issue of flooding, and related water damage to church structure.
        - 2019 Marangaroo NSW Hytec Mine-quarry site, consultancy recommendation to divert 9–10-hectare water catchment area causing heavy erosion to river by Soilstone embankment
        - 2018-2019 Thailand Windfarm consultancy work on use of Soilstone to address project 6-month delays and consequential cost over-run due to problem in wind farm related road base and drainage issues. The consultancy and supervision of recommended soilstone applied retrofitting works to road base/subbase and drainage had resulted for ALE contractor to catch up to comply with contract time of completion and cost over run stop.
    - NSW House and Land Corporation Validation of the concept and test case project
        - 2013 September accepted alternate solution for foundation soil engineering, erosion and water control under the Building Code of Australia after an invitation to submit alternate solutions tender using the test case work result with documented photos and technical data for certification requirement under the BCA based on the completed test case work in 2013 Yowie Bay NSW

    b) Achieved to date

    - Patents
        - 2018 Soilstone Patent in Australia and PCT in Geneva Switzerland
        - 2021 RE Blox and Water Embankment IP, PCT in Geneva Switzerland
        - 2022 RE Formpanel composite material for sustainable and economical soilstone form material
    - Sustainability Article on construction aggregate and soil waste to stable embankment for building structures, land fill waste minimization, site soil erosion mitigation by bound surfaces on rain period; https://www.sustainabilitymatters.net.au/content/waste/case-study/constructions-costs-cut-with-on-site-recycling-1293523475
    - Award of the presentation at a London based maritime in sustainable engineered sand-to-stone to mitigate soil erosion toward the sea https://seawork.com/ecmawards/the-european-commercial-marine-awards/2019-winners

2. Contact

Edgar Agda
Consulting Engineer (EAARE/RESoilstone), Enterprenuer

SOILSTONE™

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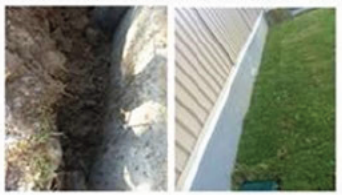
Linkedin: https://www.linkedin.com/in/edgar-arevalo-agda-22076769/
Facebook: https://www facebook.com/soilstone.blox

TECHNOLOGY APPLICATION OR TEST CASES FROM THE PAST
SOILSTONE GROUND IMPROVEMENT, BUTTRESS TERRACE WALLING, REUSABLE RE FORMPANELS

SOILSTONE TEMBANKMENT RETAINED 3.1 METER HIGH LANECOVE 2012

SOIL BASE STABILIZATION, THORNLEY NSW 2013



RETAINING WALL PROTECTION, CONDEL PARK 2013

YOWIE BAY NSW 2013 SOILSTONE

SETTLEMENT SOIL BASE STABILIZATION ILLARIE PL CASTEL HILL NSW 2013

SLOPE STABILIZATION- SOILSTONE TERRACE FRENCHS FORREST NSW DEC 2016

SOILSTONE AS WATER CHANNEL;
O DONNEL NORTH BONDI DEC201-FEB 16

SOILSTONE FILL , NORTH BONDI DEC 2016

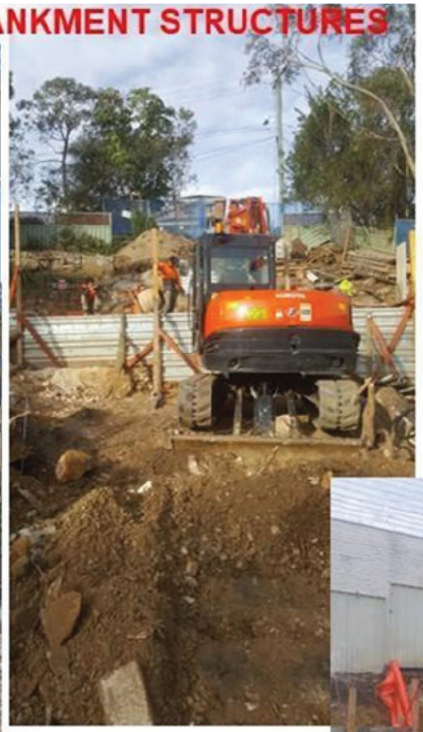
WEST PENNANT HILLS TERRACE BUTTRESS EMBANKMENT JUNE TO OCT 2016

SOILSTONE TERRACE GARDEN CASTLE HILL SEPT 2016

SOILSTONE

RE-CYCLED MATERIAL FOR SOILSTONE™ EMBANKMENT STRUCTURES

DEMOLISHED AGGREGATES

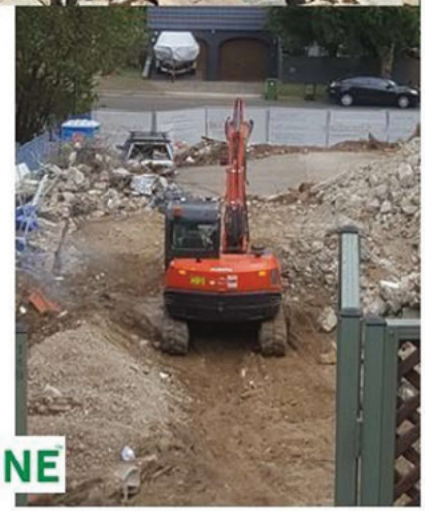


RE-FORM WORKS
SOILSTONE MIXED

- IN-SITU SOIL,
- AGGREGATES AND
- BINDER / CHEMICAL TREATMENT

AS AN:

ALTERNATIVE REINFORCED SOILSTONE™ EMBANKMENT



PROCESSED RECYCLED AGGREGATES

EQUIVALENT WAFFLE POD SLAB

RE RESEARCH ENGINEER SOILSTONE

WALL AND SLAB BASE PREPARATION PRIOR TO ACTUAL STRUCTURES

Your message to the Prime Minister

Prime Minister of Australia <webservices@pmc.gov.au>
Wed 19/09/2018 15:27
To:

Thank you for your message to the Prime Minister at pm.gov.au.

Below is a copy for your records.

Responses prepared to your message will generally be emailed to you. If you have supplied a postal address, a response may be sent to you via Australia Post. In some cases, your message may be forwarded to other Federal Ministers for their consideration.

This is an automatically generated email. Please do not reply to this email as this address is not monitored.

If you have any problems with this service please contact the Web Administrator through the site feedback service at http://www.pm.gov.au/site-feedback

Submitted on Wednesday, 19 September, 2018 - 15:26

Title: Mr
First name: Edgar
Family name: Agda
Email address:
Your address: PO Box 4847 North Rocks NSW 2151, , NorthRocks, NSW, 2151, Australia
Subject: Re: Unsolicited Solution to Australian Drought, Farmland Bushfire and Flood Crisis
Comment:
Hon Scott Morrison
Prime Minister of Australia
Parliament of Australia

Re: Unsolicited Solution to Australian Drought, Farmland Bushfire and Flood Crisis

Dear Hon Morrison:

The church I am attending regularly pray for the leaders of Australia and the nation's challenges, one of which is the current drought crisis being experienced in different parts of the country. One news article reported that the "nation finds itself in the worst spell we have seen in 400 years" (6 August 2018 News.com.au) and "this autumn has been the fourth-warmest on record in Australia, with below average rainfall for most of the country" (Bureau of Meteorology's autumn summary). Whilst the predictions of drought crisis require continued prayer, it is also imperative that each region implements actions and/or solutions based on available resources, to address the problem.

For more than 20 years, I have been researching for in-situ / on-site construction system (i.e Soilstone) that utilises in-situ soil and recyclable materials (e.g. used tyres, plastic, etc.) for foundation ground improvement, soil retention, soil erosion mitigation and water retention. I believe that our soilstone technology and construction system would be able to provide a viable solution to the drought crisis. Soilstone could be used as a water impoundment structure, flood mitigation structure and bush fire water supply storage.

For example, each farmer can construct an in-situ Soilstone water embankment in his property. The embankment can be used for crop irrigation, water supply for animals, flood control and water supply for bushfire, control of downstream floods as well as other issues related to solid waste management and climate risks.

Our analysis shows that "available monthly rainwater runoff of 1mm above the absorption level of soil is a $10m^3$ of store water per hectare or a monthly 10mm runoff is $100m^3$ of storage water per hectare at the Soilstone embankment, can provide meager supply for the farmers need. The $100m^3$ of store water per hectare is $100m^3$ of reduction of flood water at the downstream area."

Attached is an illustration of this recommendation and several posters of Soilstone application.

I certainly hope that you would be able to provide me with the opportunity to present this technology solution to you at your convenient time. If you can spare us even just 30 minutes of your valuable time, that would be highly appreciated.

Looking forward to your favorable response.

Sincerely,

Edgar Arevalo Agda
Consulting Structural/Civil/Research Engineer
PO Box 4847 North Rocks NSW 2151; M
RE Soilstone Pty Ltd
Member: Australian Cleantech Network SA Australia
Waste Contractor and Recycler Asso NSW Australia
http://resoilstone.com/testcases.html
https://www.linkedin.com/in/edgar-arevalo-agda-22076769/detail/recent-activity/shares/