Excellence in EDUCATION, INNOVATION and CONTRIBUTION to the EROSION and SEDIMENT CONTROL Industry

Vital Environment

VC VE

Vital Chemical

2017 AWARDS OF ENVIRONMENTAL EXCELLENCE

Statement

For over 40 years, Vital Chemical has manufactured and supplied innovative products to support a range of industries worldwide.

Moreover, since 2006, Vital Chemical has been pivotal in developing a unique range of soil stabilising polymer products whose introduction and adaptation has led to a sea-change in environmental management practices which deliver improved environmental, safety and health outcomes.

The market-leading suite of Vital Chemical Vital Bon-Matt products delivers effective point source stabilisation and now includes sustainable revegetation and water treatment products, providing a complete project lifecycle of environmental management systems.

More recently, Vital Chemical's environmental focus has led to the formation of their sibling company - Vital Environment - who adds further value to the industry with a purpose-built educational training and demonstration facility and an extension range of ESC products and services. The training facility provides a unique forum for consultants, regulators and contractors to meet, discuss and train in best practice in simulated erosion and sediment control (ESC) field conditions.

Vital Chemical and Vital Environment's innovative range of environmental management products and services has literally changed the Australasian landscape providing improved environmental outcomes and the support of a greener and more sustainable future of our land and water.

Vital Bon-Matt Stonewall Plus application in Albany

Summary

Through hard work, determination, commitment, innovation and excellence, Vital Chemical and Vital Environment have developed a full suite of environmental management products and associated services whilst operating at the highest standards and achieving best practice in erosion and sediment control (ESC) products and services. From their manufacturing and operations facility at Goodna in Queensland's South East, the company strives to support improved environmental outcomes by minimising erosion; providing safe and efficient products; preventing disturbed soil surfaces discharging sediment; supporting the establishment of permanent revegetation and maintenance; and providing an educational ESC facility.

Since the company's move to the Goodna facility in 2004, Vital Chemical has developed as an Australian owned and operated business, focussing on the demands and requirements of local and national environmental management and providing a products and services proudly under ISO Certified operations. The companies together employ locally and have international representation, enabling the international ESC industry the same benefits of such Australian environmental management best practice solutions. The development of the Vital Environment ESC Training Facility provides a unique, "one of a kind" educational forum for independent consultant seminars and training courses in which simulated ESC management can be tested and demonstrated.

The Vital Bon-Matt product range developed by Vital Chemical is an environmentally sound polymer-based portfolio. These products bind with soils and other erodible particulates to form permeable surfaces which have been independently tested by renowned Australian consultancies. The products are proven to provide equivalency to established grass sward.

In addition, an innovative and sustainable 100% recycled wood fibre product, VE Gro-Matt, developed by Vital Environment, now joins the companies' product range to allow Vital Chemical's products and services a full scope of environmental management. VE Gro-Matt supports long-term grass establishment when used with Vital Bon-Matt products (and also seed) to form a bonded fibre matrix (BFM). Such BFMs have allowed Vital Chemical's environmental technology to be applied into land revegetation and rehabilitation.

The latest development for the companies, is a single dose biodegradable chitosan based flocculent, Vital Eco Super Floc. This natural polymer formulation provides a sustainable alternative to other water treatment products previously available. An inert and natural polymer alternative to harsh chemical flocculant alternatives, Vital Eco Super Floc has been stringently tested by Ecotox Services Australia to Australian Guidelines for ecotoxicity, passing all toxicity requirements whilst providing efficient water treatment through flocculation.

The continued innovation and development in environmental management products and associated services sees Vital Chemical and Vital Environment standing alone in their reputation of excellence within the ESC industry.

Vital Environment

Vital Chemical

Location, beginning, respective milestones and completion dates

(List major parties involved with the entry, summarise the sequence and dates of activities)

Vital Chemical Pty Ltd was formed in Brisbane in 1977 by Albert Xavier, providing a range of industrial chemical solutions for a wide variety of industries.

In 2005 and 2006, Letiscia Xavier and Paul McMullen respectively joined the business and began exploring new opportunities and product development for the demand of the industries to which they supplied at that time, as well as to industries of the future.

In 2005, the opportunities for product development in dust control commenced as a result of Australia's Millennium Drought. This in turn led to the identification and development of the first generation of stabilising agents, initially employed as dust suppressants predominantly within the mining and resource sector. It quickly became apparent that the added benefits of soil stabilisation had much wider opportunities for Vital's stabilising agents. The added benefits of dust stabilisation had much wider opportunities and with their carefully formulated and environmentally sound properties, the products provided a more sustainable and effective solution to hydrocarbon, lignin, recycled waste products and salt based chemicals prevalent in the industries at that time. As a result, the focus for Vital became the development of robust dual benefit products which could both abate dust, yet stabilise and reduce erosion.

The introduction of the new range of products required significant commitment, determination and tenacity to bring about a quantum change in the established environmental management practices at that time. Lengthy research and development of product performance and efficiency expectations was undertaken to provide the very best performance data from the formulations developed. Intensive scientific testing of each developed product was undertaken both in-house and outsourced to independent third parties such as universities and consultancies. All new successfully efficacious products were environmentally assessed and scrutinised before product employment in the environment. Further, such innovative and scientifically focused product development was undertaken by the company whilst continuing to run their existing original businesses portfolios of heat exchange corrosion chemistry and concrete industry chemicals. Hence, the in-depth research and development of the new product range provided the very best performance knowledge for the formulations developed. All products would only be supplied to the market with their full scientific evidence and efficacy data, environmental and health safety. Vital Chemical's products would only provide excellence and best practice with their employment.

What Vital Chemical set out to achieve with their new products and services was not just the development of a range of products, but a paradigm shift in well-established ESC practices and processes. These practices and processes were often ingrained behaviours, some born of misinformation or subjective historical opinions based wholly, partly or often on unrelated products incorrectly associated with soil stabilisation and erosion and sediment control. However, the development of products with scientific assessment and evidence based data was commonplace for Vital Chemical and challenged the current methods and products with scientific data.

Vital Chemical's flagship formulation was released to the erosion and sediment control industry in in 2010, Vital Bon-Matt Stonewall. This product's rich green colour is now synonymous with stabilisation. On many sites this "noun", this product "name" has become a verb. Requests to "Stonewall a site" or an

Location, beginning, respective milestones and completion dates

(List major parties involved with the entry, summarise the sequence and dates of activities)

urgent call to have a site "Stonewalled as soon as possible" and to use the worksite vernacular, "we need some of that bon-matt green stuff", are now commonplace.

The Vital Bon-Matt range of products was well established by 2012 and further products followed, as the company was driven toward revegetation and rehabilitation projects by consultants and environmental engineers who experienced and agreed with the performance of their products. By 2015, Vital Strike was developed and provided cost effective and efficient alternatives to multi-step stabilisation and revegetation methods. Vital Strike, a polymer designed to support revegetation with a NPK fertiliser blend to aid grass strike and establishment was employed for revegetation and rehabilitation purposes during the coal seam gas pipeline projects in Western Queensland. As with all products manufactured by Vital Chemical, these products are often formulated, tested and employed to suit specific requirements of soil sample analysis or other available data.

Also in 2015, Vital Bon-Matt HR, a heavy-duty stabiliser and dust suppressant capable of withstanding the rigors of mining and civil construction traffic was launched. This robust polymer formulation would soon prove to be the market leader in mine haul road dust control. Popular on mining sites as the polymers harden and seal the roads and prevent dust and fines eroding away, Vital Bon-Matt HR can save an average 80% of water when compared to ongoing water and watercart use whilst reducing road grading and maintenance. There are also rural road benefits with this product with seasonal applications reducing dust and sediment discharges into roadside drains and waterways. Vital Bon-Matt HR also performs very well when applied to concentrated flow channels, providing a cost-effective and sustainable alternative to traditional channel liners which require maintenance, repair and decommissioning and which often contribute to the landfill burden.

In 2016 Polykelp was launched and similar to Vital Strike, provided a single step approach to stabilisation and soil treatment. Vital Polykelp possessed soil amerliorants for soil conditioning whilst stabilising. Such ameriolants provided by the product introduces higher organic-mass for revegetation for poor soil conditions to assist with more sustained growth. Vital Polykelp has recently been employed to support the Kaikoura Earthquake Recovery Programme in New Zealand where difficult terrain and poor eroded soils required a nutrient rich product with proven stabilisation benefits. Project managers identified Vital Polykelp as the ideal option for this challenging high value natural environment.

By now, Vital Chemical commenced turn-key product applications as an addition to their "product only" supply. In undertaking product applications on client sites, Vital Chemical was able to ensure that their products would perform to the highest standards whilst providing cost efficiencies to their clients through reduced operator and equipment costs. Vital Chemical turn-key applications soon became available for all Vital Chemical products throughout Australia and though their industry partners, throughout New Zealand.

In 2016, Vital Environment was formed to support the delivery of the Vital Bon-Matt product range and to provide the ESC industry with a purpose-built educational training facility in South East Queensland. This unique facility was an Australian first, with independent and renowned environmental consultancies undertaking educational seminars and training days and utilising the

Location, beginning, respective milestones and completion dates

(List major parties involved with the entry, summarise the sequence and dates of activities)

site for erosion and sediment control simulation. Further product development followed with Vital Environment's VE Gro-Matt, a 100% recycled Australian wood fibre. VE Gro-Matt is employed as a standard hydromulch fibre or can be combined with Vital Bon-Matt products to form a bonded fibre matrix (BFM). Combining the absorbency of wood fibres with the stabilisation qualities of the Vital Bon-Matt products affords seed an effective growing medium, particularly when additional organics or nutrients are included, which are often provided when required. The VE Gro-Matt BFM is rapidly becoming the industry's premier revegetation option with applications of the product in a variety of applications throughout Australia and New Zealand.

Again in 2016, Vital Chemical together with Vital Environment launched Vital Eco Super Floc, a chitosan based flocculent. Vital Eco Super Floc is aptly named. The benefits of a chitosan flocculent are clear and following treatment the same can be said of water being treated. Due to the negligible environmental impact and high performance of the flocculant, uptake has been swift and is rapidly replacing alum, gypsum and other flocculants. The decision to employ Vital Eco Super Floc is based on the safe and reliable performance of a biodegradable product made from natural crustacean polymers.

Now, in 2017, the full complement of environmental management products and services are available from Vital Chemical in conjunction with Vital Environment. The companies are unrivalled in the erosion and sediment control industry as a quality supplier of products and services and who demonstrate excellence at every level of their business.

Details of independent testing:

Assessment of Soil Stabilisation Compounds
June 2013
Strategic Environmental & Engineering Consulting (SEEC) and Landloch
This report was undertaken to provide an assessment of the ability of soil stabiliser products to protect soil surfaces against the erosive forces of rainfall and overland flow.
Products tested – Vital Bon-Matt P47-VR1 and Vital Bon-Matt Stonewall

Field Trial of Grass Seed Germination and Growth Using Vital Chemical's Veneers
August 2013
Strategic Environmental & Engineering Consulting (SEEC)
This report was undertaken to determine the impacts of Vital Chemical veneers on the germination and growth of grass seed using a scientific research field trial.
Products tested – Vital Bon-Matt P47-VR1 and Vital Bon-Matt Stonewall

Stage 2 Field Trial of Grass Seed Germination and Growth Using Vital Chemical's Veneers
August 2015
Strategic Environmental & Engineering Consulting (SEEC)
This report was undertaken to determine the impacts of Vital Bon-Matt P47-VR1 and Vital Strike on the germination and growth of grass seed using a scientific research field trial.
Products tested - Vital Bon-Matt P47-VR1 and Vital Bon-Matt Stonewall

Location, beginning, respective milestones and completion dates

(List major parties involved with the entry, summarise the sequence and dates of activities)

Watching the Grass Grow
September 2014
Landloch and O2 Ecology (commissioned by Arrow Energy)
This report was undertaken to compare erosion/rehabilitation control techniques on uncompacted lower sloped sites (similar to a typical well pad or pipeline scenario); assess the erosion control ability and cost of treatment and assess the rehabilitation success of techniques.
Products tested - Vital Bon-Matt Stonewall

Vital Bon-Matt Stonewall Surface Stabiliser Performance in Earthen Channels
November 2014
Landloch
This report was undertaken to determine the effectiveness as a soil surface stabiliser under concentrated flow conditions.
Products tested - Vital Bon-Matt Stonewall

Toxicity Assessment of Vital Eco Super Floc
March 2017
Ecotox Services Australia
To comply with New South Wales Roads and Maritime Services requirements, Vital Chemical undertook ecotoxicity and bioavailability testing on green alga Selenastrum capricornutum, freshwater cladoceran Ceriodaphnia dubia and eastern rainbowfish Melanotaenia splendida splendida.
Products tested – Vital Eco Super Floc

Assessment of Vital Bon-Matt P47-VR1 and Vital Bon-Matt Stonewall with Respect to Hazards to Bovines Through Ingestion
June 2015
Gauge Industrial & Environmental
This report was undertaken to determine the hazards of Vital Bon-Matt products to bovines through ingestion.
Products tested – Vital Bon-Matt P47-VR1 and Vital Bon-Matt Stonewall

Assessment of Vital Strike with Respect to Hazards to Bovines Through Ingestion
June 2015
Gauge Industrial & Environmental
This report was undertaken to determine the hazards of Vital Bon-Matt products to bovines through ingestion.
Products tested – Vital Strike.

Assessment of Environmental Risks with the Use of Vital Eco Super Floc Used in Sedimentation Ponds and Water Treatment Applications
September 2016
Gauge Industrial & Environmental
This report was undertaken to determine the environmental risks associated with using Vital Eco Super Floc in sedimentation ponds and water treatment applications.
Products tested – Vital Eco Super Floc

Location, beginning, respective milestones and completion dates

(List major parties involved with the entry, summarise the sequence and dates of activities)

Review of Aquatic Ecosystem Risks Associated with the Use of Dust and Erosion Control Product, Vital Bon-Matt HR
December 2015
Gauge Industrial & Environmental
This report was undertaken to determine the environmental risks associated with the use of Vital Bon-Matt HR
Product tested – Vital Bon-Matt HR

Assessment of Vital Bon-Matt HR with Respect to Hazards to Bovines Through Ingestion
December 2016
Gauge Industrial & Environmental
This report was undertaken to determine the hazards of Vital Bon-Matt products to bovine through ingestion.
Product tested – Vital Bon-Matt HR

Wind Tunnel Test For The Evaluation of Vital Chemical Surface Veneer Products To Reduce Dust Lift-Off From Coal Stockpiles
September 2012
Introspec Consulting
This report was undertaken to determine the effectiveness of the surface veneer treatment to reduce dust emission from the surface of coal stockpiles.
Product tested – Vital Bon-Matt Stonewall

Wind Tunnel Tests For The Evaluation Of Vital Chemical Surface Veneer Product To Reduce Dust
March 2013
Lift Off From The Surface Of Ten Typical Queensland Coal Types During Rail Transport
This report was undertaken to determine the effectiveness of the surface veneer treatment to reduce dust emission from the surface of ten typical coal types transported by rail.
Product Tested – Vital Bon-Matt Stonewall

FUTURE DEVELOPMENTAL STUDIES

Vital Chemical's continued commitment to development and analysis of Vital Chemical and Vital Environment products:

Erosion Control and Growth Trial VE Gro-Matt
2017
Strategic Environmental and Engineering Consulting (SEEC)
Project to be completed 2017 – 2018.

The above independent third party studies and reports demonstrate the performance of Vital Chemical products in varying applications, conditions, exposures and environments. All studies are undertaken by consultancies renowned in the erosion control industry in Australasia. Field trials are often undertaken over long term periods. Hence, Vital Chemical's scientific and evidenced based approach to product design and development is paramount to their position of excellence in the industry.

SECTION 3

Distinctive Features, Special Accomplishments, Difficult Challenges and other Unique Aspects

The Vital Chemical product range of Vital Bon-Matt products, VE Gro-Matt, Vital Eco Super Floc and other BFM and revegation products and services has several distinctive features which have now become synonymous with worksite ESC stabilisation practices. These features are predominantly a result of more than a decade of dedicated work by Vital Chemical to develop product formulations which would be both understood and accepted in the field as best practice due to the undeniable results of the studies and analysis undertaken on the products, together with the end result of their employment in the field.

The increased employment and growing product referral throughout Australasia is a special accomplishment for the company, with products commonly specified into projects based on historical success on previous or associated projects. Vital Chemical products are renowned within the civil construction sector as being 100% reliable, and also unrivalled with their onsite technical product support.

Vital Chemical and Vital Environment's ability to formulate and develop products in their range which are fully environmentally compliant and workplace safe is an accomplishment in itself. Every product's list of prototypes in the developmental phase are fully scrutinised for formulation component compliance. Only formulations which are 100% compliant make it through to the in-house laboratory and field testing phase before streamlined down to performance. The final prototype is then fully assessed both chemically, environmentally before being further subjected to long term field studies through third party consultants, who independently measure the products success. It is at this point that the product is fully approved to be offered in the market. Such product development and testing is standalone within the ESC industry and differentiates Vital Chemical and Vital Environment from other less scientific and evidenced based "snake oil" and "copycats" suppliers. Only Vital Chemical and Vital Environment's scientific approach allows the companies to stand above others as ethical, evidenced based supplier, a demonstration of excellence and a great attribute to the companies.

Vital Chemical undertakes in-house efficacy analysis and testing of its products to define the most efficient product for a range of chemically compliant prototypes. From here, to better understand the further testing regimes undertaken, it is important to demonstrate the level of testing from independent third party consultants and universities. Firstly, in-house research, development and laboratory and field testing is undertaken at the Goodna facility. The prototype product formulation proven to be fully chemically environmentally compliant is then outsourced for further field analysis and testing. Some products are submitted for wind tunnel testing at Tunra Bulk Solids. Wind tunnel testing demonstrates the products resistance to wind erosion – a test for stability and tenacity. The product which is applied to a defined testing surface is exposed to wind speeds of up to 72km/hour for a set period of time – 4-8 hours. Any dust lift-off is measured, with a successful product demonstrating <10mg of lift-off. Other testing undertaken at this level, and dependant upon what the product is required to achieve will include further methods of simulated field testing. As field studies are long term, the product is also fully assessed for initial environmental compliance (by Simmonds and Bristow) and at the same time, aquatic ecotoxicity (by Gauge Industrial and Environmental) and other more specific product requirements for the environments and applications to which they are developed for.

Distinctive Features, Special Accomplishments, Difficult Challenges and other Unique Aspects

Challenges for product development are constant. Not only do the companies have to formulate and test to specific guidelines, compliance and efficacies, they must also ensure that the products are feasible and cost effective for their markets. Also challenging is the companies' commitment to the sourcing of local suppliers, contractors and industry partners who can match the re quality standards and excellence of Vital Chemical and Vital Environment both in ISO Certification and company ethos. However, Vital Chemical and Vital Environment do overcome these challenges with persistence and the appropriate commercial networking which is supported by their commitment, membership and association with industry associations such as the IECA, CIA, Healthy Land and Water, Stormwater QLD and APGA, but to name a few.

Further challenges faced by Vital Chemical and Vital Environment are the industry requirements for site/project ingrained and historical work practices and behaviours which often require lengthy support and clear improved deliverables to overcome barriers to change and accept innovation. There have been several difficult challenges associated with the introduction of a new concept of widespread progressive point source stabilisation to minimise the impact of development. Historical practices of using straw/hay for erosion control is one example where Vital Bon-Matt as an alternative both in efficacy and cost was a difficult practice to change in certain regions in New Zealand. However, with demonstrated field comparisons undertaken in Vital Chemical and industry partner educational field days, the improved efficacy of polymer point source stabilisation and cost benefits have easily become apparent to industry personnel.

The use of alum and gypsum as commonly specified sediment pond water treatment is currently changing. This long term practice has been a challenge for Vital Chemical and Vital Environment to overcome, however with Vital Eco Super Floc and its non-hazardous, Daphnia (water flea) "friendly" and efficient flocculant formulation, there is a noticeable shift being currently witnessed in the industry. A final example of historical practice challenges for the companies is the use of bitumen emulsion as a stabilising agent. Vital Bon-Matt products offer more environmentally sound and improved erosion control efficiency compared to bitumen emulsions which have traditionally been employed on sand surface projects. The Brisbane Airport Corporation New Parrallel Runway (NPR) converted to Vital Bon-Matt Stonewall for a vast majority of their project erosion stabilisation works in 2015. This practice has also been replicated on other sand stabilisation projects in light of the NPR.

Such historical and ingrained work practices and behaviours require lengthy support and clear improved deliverables to overcome barriers to change and accept innovation. This has also required interaction and relationship building with regulators, consultants, designers, engineers, project managers, purchasing managers, site managers and subcontractors to ensure clear line of sight across numerous complex and varying projects with existing operating systems.

With customers operating throughout Australasia, the challenge to provide support to cover such a vast region with varying environmental, site and project requirements. The companies, whilst challenged, do manage to provide their support due to their experienced and industry leading team of personnel of Directors, Business Development Managers, Technician, Scientists, Operators, Administration personnel and other production and logistical

Distinctive Features, Special Accomplishments, Difficult Challenges and other Unique Aspects

staff. The Vital Chemical team maintain a "family" culture and ethos, which enables the delivery of personalised service, no matter the challenge. Further, other site and project challenges are also easily dealt with and overcome due to the companies industry knowledge, geotechnical and environmental personnel and growing the network of industry professionals. The challenges of sites and projects are often easily overcome with Vital Chemical personnel interacting with regulators, consultants, designers, engineers, project managers, purchasing managers, site managers and subcontractors. These strong relationships are based on the companies' reputation and the ability of all parties who work together for the common goal of product performance and environmental compliance. Vital Chemical and Vital Environment pride themselves on being able to overcome all such challenges and also the relationships which have evolved and resulted from their practices in excellence within the ECS industry.

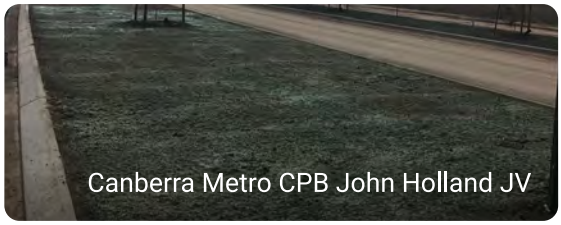
Further special accomplishments achieved by the companies include the following selection of Vital Chemical and Vital Environment products for employment on key infrastructure projects including (but not limited to):

- Arrow Energy - selection of Vital Bon-Matt Stonewall for Coal Seam Gas pipeline erosion stabilisation and rehabilitation, following an 18 month in-house Arrow field trial – Watching the Grass Grow.
- Brisbane Airport New Parallel Runway Project – selection of Vital Bon-Matt Stonewall for sand erosion stabilisation
- Queenstown Airport Runway Widening Project – Selection of Vital Bon-Matt Stonewall for water and wind erosion and minimisation of airborne particulate matter in the airfield space.
- Flinders Power Port Augusta Tailings Dam Stabilisation Project – Aerial applications with Vital Bon-Matt Stonewall for tailings fine dust stabilisation.
- Westconnex CPB Samsung John Holland New M5 and M4 East Projects Sydney – Erosion control with Vital Bon-Matt Stonewall and sediment pond treatment with Vital Eco Super Floc.
- Lend Lease Kingsford Smith Drive Upgrade Project Brisbane – Erosion control with Vital Bon-Matt Stonewall for the project in close proximity to the Brisbane River.
- Canberra Metro CPB John Holland JV – Vital Bon-Matt Stonewall employed for erosion control.
- BMD Springfield Ipswich QLD Sports Field and Heath Centre Development – Vital Bon-Matt Stonewall for erosion control and VE Gro-Matt hydromulch varieties for revegetation.

Distinctive Features, Special Accomplishments, Difficult Challenges and other Unique Aspects

A final accomplishment of the companies of great note worthiness is that of the development of the Vital Environment ESC Training Facility at Goodna in Queensland. This facility is a unique and Australian first facility which is designed specifically for ESC professionals to further their education in ESC and related topics. This educational forum also offers the ability for attendees to not only view, but also undertake hands on training with the facilities sediment ponds, run-off channels and flow channels. The facility is offered to all ESC consultancies and even independent organisations for training and demonstration field days. This unique facility greatly benefits the ESC industry by allowing simulated experience never available before. Similar concept facilities have previously been developed by government agencies in the past, however the Vital Environment facility is available to all enterprises and individual consultancies and organisations with the site able to be developed for specific field simulation requirements. Hence, with the Vital Environment ESC Training Facility, speciality products and the product and service range of Vital Chemical, a clear commitment to overcoming challenges, introducing new systems, technologies and contribution to the wider environmental management sector sees these companies as unique contributors to the ESC industry.


Arrow Energy


Canberra Metro CPB John Holland JV


BMD Springfield Ipswich QLD Sports Field and Heath Centre Development


Brisbane Airport New Parallel Runway Project


Queenstown Airport Runway Widening Project


Flinders Power Port Augusta Tailings Dam Stabilisation Project


Westconnex CPB Samsung John Holland New M5 and M4 East Projects Sydney

SECTION 4

Benefits to the Environment, Community, the Erosion Control Industry and Our Company

The benefits of the employment of Vital Chemical and Vital Environment's products and services in the ESC industry over the past decade have provided a plethora of benefits to the environment, community, ESC industry and to the companies themselves.

In referencing from the SEEC Landloch study, Assessment of Soil stabilisation Compounds, June 2013, the independent testing undertaken by Vital Chemical demonstrates that when their products are employed, a recognised C Factor is immediately achieved reducing not only the risk of erosion occurring but also the physical loss of sediment and fugitive dust emissions with one application.

As with any preventative measure where a control sample or baseline does not exist, the true benefits cannot be empirically established for every site where the products have been employed. However, assumptions can be made as to the on average benefits based on the previously mentioned independent studies. With several millions of litres of Vital Bon-Matt products manufactured over the past decade, it is reasonably fair to say that such products employed repeatably over a vast number of sites and projects in such a time frame, that the benefits are significant and worthy of recognition on that basis alone.

The reduction of sediment into the environment has many benefits and cost savings for contractors on site. The employment of Vital products reduce the requirement to rework damaged areas and provide cost savings on expensive synthetic coverings which require decommissioning and disposal (adding to the landfill burden).

Vital products also reduce onsite water consumption. In relation to the use of Vital Bon-Matt HR, this is calculated at approximately 80% of water use on trafficable surfaces. The majority of urban infrastructure is reliant on potable drinking water for this purpose and the savings can easily be in the region of mega-litres for urban development sites when areas are stabilised with Vital products.

Vital Chemical has been a strong contributor to the ESC industry through direct support of IECA events and conferences or indirectly promoting the benefits of IECA membership as well as the sponsorship of graduates to attend such events. The Vital Environment training and testing facility is another example of commitment to the sector to improve understanding and use of the key principles in erosion and sediment control.

All of the above mentioned benefits of Vital products and also services have a direct and corresponding benefit to the communities in close proximity to urban developments and also to the wider community. Benefits to communities are easily measured in the forms of improved worksite safety and health and also environmental impact reduction and management. Such impacts are efficiently and safely managed and mitigated with Vital products. However, the resulting wider community benefits are achieved as such improvements support greater efficiencies, contributing to the delivery of the projects on time and on budget. For example, the use of Vital products at the Brisbane Airport Parallel Runway Project has effectively managed the safety, health and environmental impact of 3.5Km2 of reclaimed material from the estuary for 18 months avoiding any risk of disruption to the international terminal and to the sensitive ecosystems of Queensland's Morton Bay.

In a wider context, the reduction of erosion and subsequent sediment discharges reduces the risk of damage to natural surface waterways which can have high

Benefits to the Environment, Community, the Erosion Control Industry and Our Company

socio-economic and amenity values for the communities within that catchment, as well as reducing damage to the built storm water systems where sediment can block or restrict storm water flows, resulting in flooding during high rain events. There are many impacts to communitites and the environment that Vital products and services assist in reducing through the products themselves not having any associated risk with their inert chemistries, formulations and designs. Hence, if such products can have no impact themselves on such environemts and communities whilst at the same time reduce impacts of erosion and sediments for urban development, then the employment of such products and services can only be seen as wholistically beneficial.

Finally, in relation to the benefits to the organisations of Vital Chemical and Vital Environment. The success of the development and growth of the range of products and services of Vital Chemical and Vital Environment has provided a new scope of science and environmental awareness to the companies' personnel. With increased environmental focus driven by the requirements of the ESC industry, the flow-on effects to Vital Chemical's other product and industry portfolio's have followed suit. Vital Chemical now only formulates new product developments with non-hazardous components and is itself and EPA licenced organisation who also proudly promotes their ISO 14001 Environment Certified Quality System. Increased awareness and uptake in the use of Vital products has allowed Vital Chemical, Vital Environment, their industry partners and customers to only improve ESC practices with efficiency in performance and cost, whilst providing positive environmental benefits to local and the wider national and international communities and environments. The commitment of Vital Chemical and Vital Environment to the ESC Industry is to continually demonstrate and provide continued excellence in all products and services delivered now and into a more environmentally aware and sustainable future.