Advanced Geosynthetic Solutions

—

CIVIL HANDBOOK

VERSION 3.

CIRTEX®
GAIN MORE GROUND

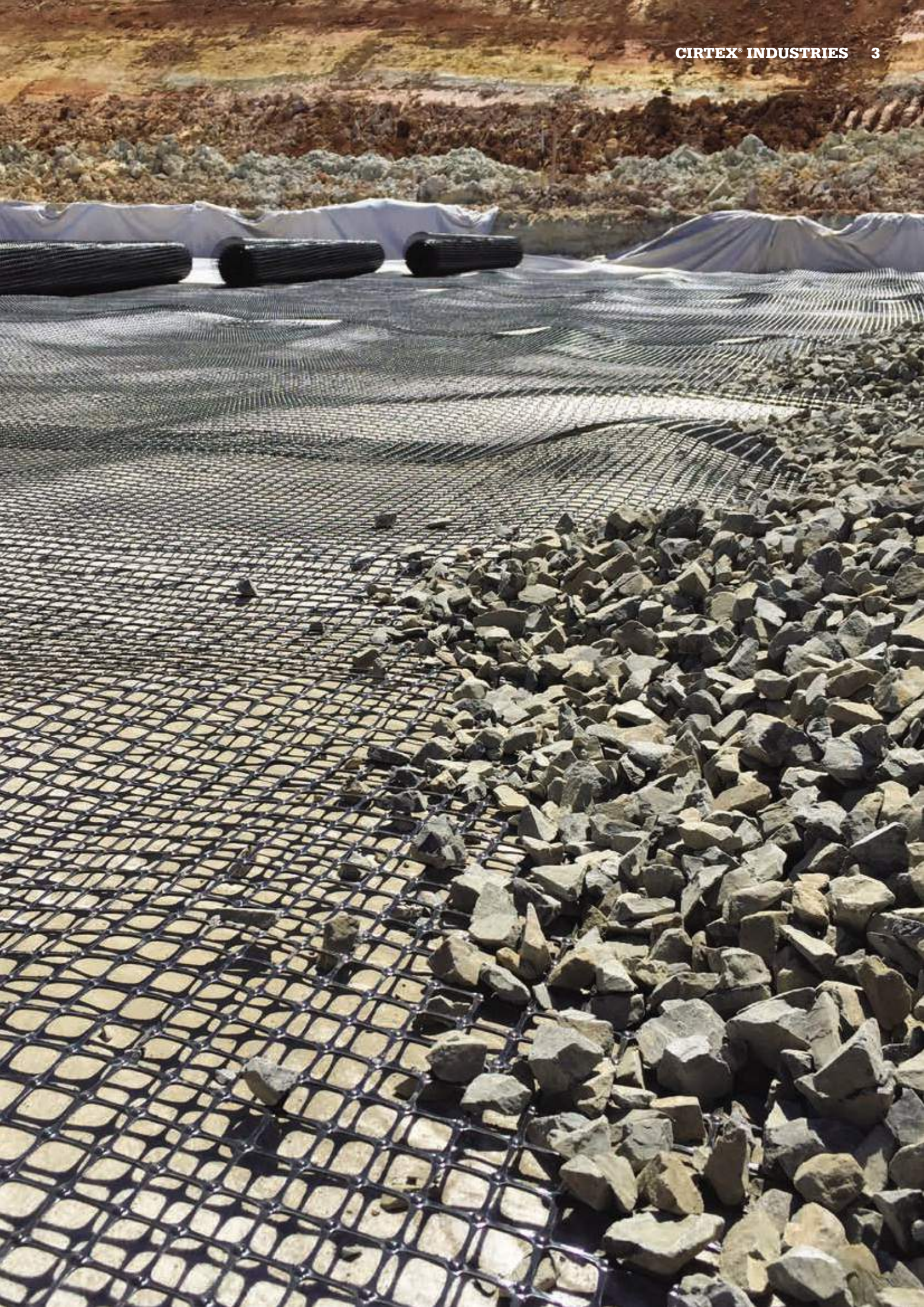
Company Overview

Cirtex® is committed to much more than supplying world class geosynthetics, erosion and sediment control and earth anchoring solutions. Our team is passionate about providing our valued clients with professional, innovative and leading edge solutions backed up by an uncompromising focus on quality and customer service.

From concept ideas, design assistance and reviews from our technical team to on site support by our experienced field support team, Cirtex has the wealth of experience you need. We provide proven, cost-effective solutions to challenges in civil engineering, environmental, erosion and sediment control, site supplies and hydraulic projects.

Our products are available from all Cirtex branches situated throughout New Zealand to provide prompt and reliable service.

CIRTEX®
GAIN MORE GROUND



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Cirtex® Branches

Thames
Head Office

Thames
Manufacturing Plant

Auckland - Manukau
Sales Office & Distribution

Auckland - Silverdale
Sales Office & Distribution

Tauranga
Sales Office & Distribution

Christchurch
Sales Office & Distribution

Hamilton
Sales Office + Distribution

Gold Coast
Sales Office

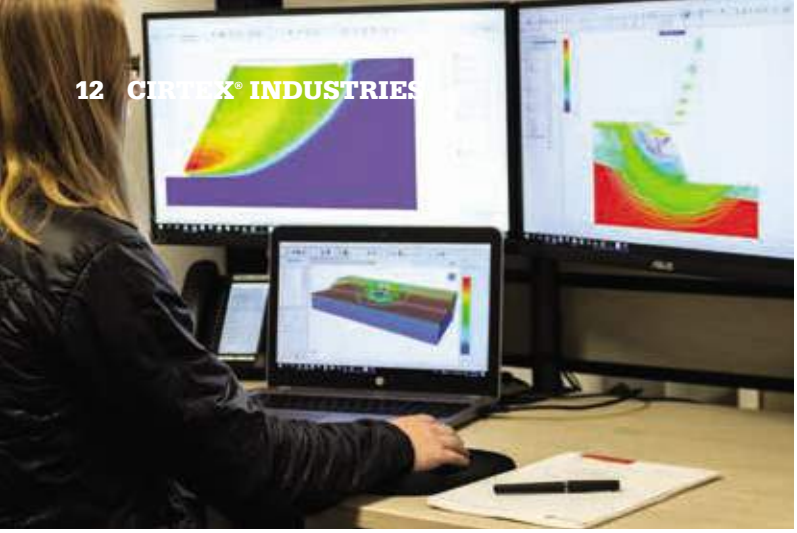
Optimised Engineering Solutions

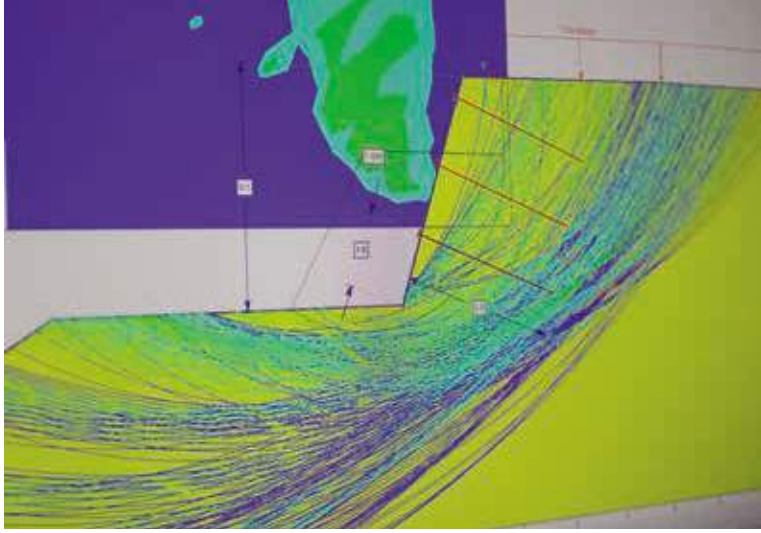
Engineering is both a specialised science and an art. We work together with the best consultants and contractors in the industry, and add our extensive knowledge of geosynthetics and sustainable infrastructure development. Together with our in-house expertise we can ensure the best use of resources and provide optimised engineered solutions.

WE DON'T SIMPLY SELL PRODUCTS,
WE OFFER SOLUTIONS FOR YOUR PROJECTS.

CIRTEX SOLUTIONS >

- Pavements, Embankments and Raft Foundations
- Reinforced Soil Walls
- Stormwater Management Systems
- Slope Stability Systems
- Earth Anchoring Systems
- Subsoil Drainage Filtration
- Retaining Walls
- Coastal Protection
- Surfacing Reinforcement
- Landfill and Environmental Barrier Systems
- Dewatering
- Erosion and Sediment Control
- Site Supplies
- Permeable Paving
- Landscape Edging and Paver Restraints





Technical Expertise

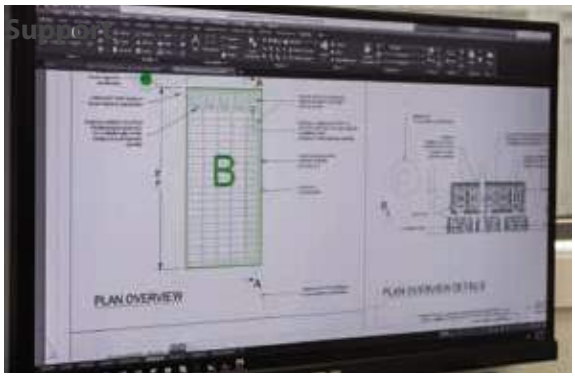
Our technical and design support staff are available throughout the sales process and project duration to support the contractor in the use and best practice associated with products supplied. We offer technical presentations, one on one or in formal groups. Cirtex® has a reputation for assisting customers beyond what would normally be expected, as part of our commitment to a partnership of expertise and success.

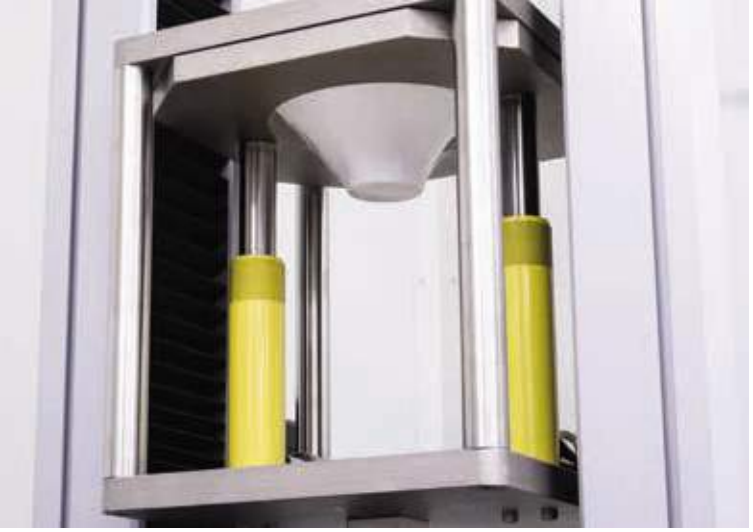
Technical Ability
Design support is a key feature that Cirtex offers. Please refer to the Cirtex 'Project Design Options' document for more information on this service. For a copy please contact 0800 CIRTEX.

Technology
Cirtex is dedicated to being up to date with industry developments and methodology globally.

From initial concepts through to advanced collaboration with the project engineers and on site installation support, Cirtex is focused on providing outstanding support throughout the entire project.

Traceability
Cirtex operates a world class roll tracking system to trace roll numbers back to production records and batch test data. Product Quality Assurance Data can be traced from the invoice.





GEOCERT

ilac-MRA IANZ
ACCREDITED LABORATORY

The GeoCert geosynthetics testing laboratory is a specialist facility for testing geosynthetic materials and Filter Sleeve™. The laboratory holds an IANZ accreditation to the ISO 17025 standard for its scope of testing. This is a world class accreditation which demonstrates a high level of independence and accuracy giving certainty to our customers.

This modern laboratory is equipped with state of the art, world class equipment and independently accredited processes which allows Cirtex to offer a higher level of certainty and support to the industry in New Zealand. In addition this facility provides exciting opportunities for research and development, and project specific testing to optimise designs.

On Site Testing & Support

At Cirtex® we recognise that each project comes with its own unique set of challenges which include physical site constraints, time pressures and working with the many and varied soil types found throughout New Zealand. In some cases, site specific testing of the geosynthetic can be undertaken to ensure the most efficient design and give the designer greater certainty.

As a result Cirtex has invested in a range of testing equipment, which along with the GeoCert laboratory, allows us to undertake site specific testing in conjunction with the contractor and project engineer to ensure we are offering the most efficient product for the project.

Further information on the scope of testing along with project specific costings are available on request.

Industry Development Seminars

Geosynthetics and environmental protection are fields which are developing rapidly, led by the demand for better outcomes with increased construction efficiencies and less environmental impact.

Intensive research resulting in constantly evolving developments from the world's leading universities, government departments and research institutes is providing specifiers with new and advanced opportunities to bring to their clients.

Cirtex® is committed to bringing these developments to the New Zealand market. This is achieved by providing both in-house training seminars at your premises, regional seminars, and specialised training courses with some of the world's leading, independent geotechnical experts.

GEOTEXTILES

DuraForce® AS

NONWOVEN GEOTEXTILES

DuraForce® AS geotextiles are manufactured and tested to exact quality standards and rated according to the NZTA F/7 specification for geotextiles.

There is an extensive range of geotextiles available. Due to the process by which they are manufactured different performance capabilities can be achieved. Frequently there will be a secondary function required of the geotextile as well as the primary function, e.g. drainage as the primary function and separation as the secondary.

Nonwoven needle punched geotextiles are manufactured from the extrusion of fibres which are laid down on a manufacturing 'bed' and then needle punched. This manufacturing process allows for the use of nonwoven geotextiles in applications of drainage, filtration and protection.

FEATURES ›

- **Rated according to NZTA F/7** specification for geotextile
- **Large range of grades** to provide the right product for each application
- Wide **range of roll sizes** to suit different site requirements and reduce wastage
- Available in both **polypropylene** and **polyester**
- Large **stock holding nationwide** to provide fast delivery

DURAFORCE®

	AS240	AS280
AS240-Filtration classes 1 - 4 strength class A AS280-Filtration classes 1 - 4 strength class B AS410-Filtration classes 1 - 4 strength class C AS440-Filtration classes 1 - 4 strength class D AS640-Filtration classes 1 - 4 strength class E	**NZTA F/7 Classes** Strength Class A Filtration Classes 1, 2, 3, 4 **Recommended uses** • Trench drains, when using D_{85} aggregate ≤ 40mm, with a trench depth ≤ 2m. • Separation layers and drainage blankets, when using D_{85} aggregate ≤ 40mm, and CBR is ≥ 3.	**NZTA F/7 Classes** Strength Class B Filtration Classes 1, 2, 3, 4 **Recommended uses** • Trench drains, when using D_{85} aggregate ≤ 40mm, with a trench depth ≤ 3m. • Trench drains, when using D_{85} aggregate ≤ 75mm, with a trench depth ≤ 2m. • Separation layers and drainage blankets, when using D_{85} aggregate ≤ 75mm, and CBR is ≥ 3. • Drainage and separation behind retaining walls.

AS410	AS440	AS640
NZTA F/7 Classes Strength Class C Filtration Classes 1, 2, 3, 4 **Recommended uses** • Trench drains, when using D_{85} aggregate ≤ 75mm, with a trench depth ≤ 3m. • Trench drains, when using D_{85} aggregate ≤ 200mm, with a trench depth ≤ 2m. • Separation layers and drainage blankets, when using D_{85} aggregate ≤ 200mm, and CBR is ≥ 3. • Drainage and separation behind gabions and rock mattresses. • Drainage and separation behind crib walls.	**NZTA F/7 Classes** Strength Class D Filtration Classes 1, 2, 3, 4 **Recommended uses** • Trench drains, when using D_{85} aggregate ≤ 200mm, with a trench depth ≤ 3m. • Separation layers and drainage blankets, when using D_{85} aggregate ≤ 200mm, and CBR is between 1 and 3. • Separation layers and drainage blankets, when using D_{85}aggregate ≤ 400mm, and CBR is ≥ 3. • Under rock armour revetment, when using D_{85} ≤ 200mm.	**NZTA F/7 Classes** Strength Class E Filtration Classes 1, 2, 3, 4 **Recommended uses** • Separation layers and drainage blankets, when using D_{85} aggregate ≤ 400mm, and CBR is between 1 and 3. • Separation layers and drainage blankets, when using D_{85} aggregate ≤ 600mm, and CBR is ≥ 3. • Under rock armour revetment, when using D_{85} ≤ 400mm.

DURAFORCE RANGE

Code	Grade	Roll	Area	NZTA Strength Class
76017	AS240	1.9m x 50m	95m^2	A
76018	AS240	3.9m x 50m	195m^2	A
76033	AS240	4m x 100m	400m^2	A
13389	AS240	6m x 100m	600m^2	A
76021	AS280	1.9m x 50m	95m^2	B
76022	AS280	3.9m x 50m	195m^2	B
76045	AS280	4m x 100m	400m^2	B
13407	AS280	6m x 100m	600m^2	B
76023	AS410	1.9m x 50m	95m^2	C
76024	AS410	3.9m x 50m	195m^2	C
76048	AS410	4m x 100m	400m^2	C
76050	AS440	4m x 100m	400m^2	D
76539	AS440	6m x 100m	600m^2	D
76082	AS640	4m x 75m	300m^2	E
13887	AS640	6m x 75m	450m^2	E

TerraTex® K

NONWOVEN GEOTEXTILES

TerraTex® K geotextiles are an extremely robust nonwoven staple fibre geotextile, suitable for the harsh conditions found in coastal and shoreline applications.

TerraTex K geotextiles are a heavyweight geotextile for use under rock riprap, liner protection and other applications when an extremely robust nonwoven geotextile is required.

The TerraTex K range is a UV stabilised geotextile made from 100% polypropylene staple fibres. This product is made in one of the worlds newest and most advanced nonwoven manufacturing facilities, so you can be confident of its high quality and consistency.

FEATURES >

- **Prevents erosion** of fine granular material behind rock riprap **in coastal and marine areas**
- **Protects** and **preserves shorelines** from wind, wave and tidal action
- **Extends the life** of rock armouring
- **Four grades available** to suit each particular project's conditions
- **Large roll sizes** make installation efficient
- **Staple fibre nonwoven geotextiles** are ideal for use where abrasion and movement are present
- Suitable for applications **protecting liners from puncture** by subgrade or backfill materials

TERRATEX RANGE

Code	Grade	Roll Size	Area
56040	750K	6m x 80m	480m²
56039	920K	6m x 60m	360m²
56016	1300K	6m x 45m	270m²
56038	1850K	6m x 30m	180m²

PaveSeal

SEALING GEOTEXTILE

PaveSeal is a nonwoven PET geotextile used in the repair and maintenance of pavement surfaces.

The addition of PaveSeal to the sealing process can help reduce or eliminate reflective cracking and provide a waterproof membrane between the old cracked surface and the new seal. The PaveSeal absorbs the tack coat providing a reinforced bituminous waterproof layer in the pavement. This waterproof layer prevents further deterioration of cracked pavements below and helps to reinforce the new surface.

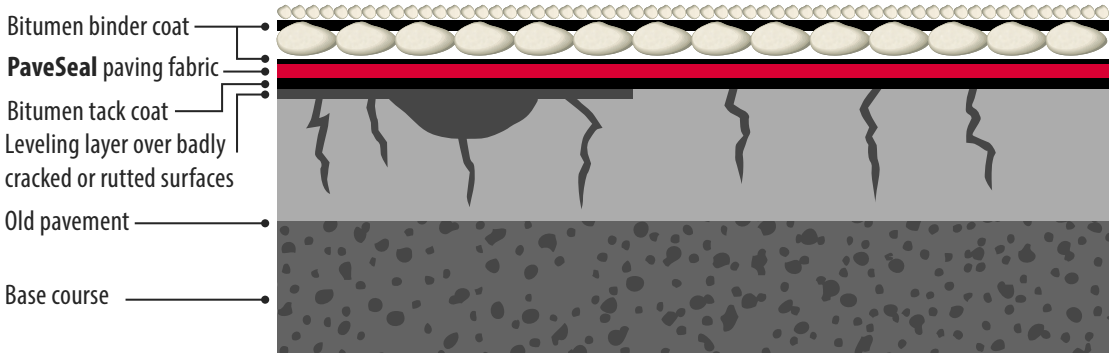
The tack coat of 0.7 – 0.9 L/m^2 is applied followed by the PaveSeal on to the tack coat. Once the PaveSeal is laid another seal coat is applied, and the chip placed.

FEATURES >

- **Wide 4m rolls** for efficient installation
- **PET continuous filament** geotextile for **minimum shrinkage**
- **High melting point**
- **Reduces** reflective cracking
- **Increases** waterproofing performance

SPRAYED BITUMEN RESEALS >

PaveSeal incorporated into reseals for maintenance is laid over the existing surface to provide waterproofing and stress alleviation in cracked pavements.



PAVESEAL

Code	Grade	Roll Size	Area
76757	AS240P	4m x 100m	400m^2
76758	AS280P	4m x 100m	400m^2

Custom roll sizes available on request

DuraForce® WG

WOVEN GEOTEXTILES

DuraForce® WG woven geotextiles are suited to applications requiring both separation and reinforcement.

DuraForce WG is a polypropylene (PP) range of products used in unpaved roading applications, where the primary function is separation with a secondary benefit of reinforcement.

Typically, the strength range of these products is between 14 kN/m to 150 kN/m.

This product is predominantly used in the construction of access tracks and unsealed roads providing access to and around project sites.

Within the forestry industry, DuraForce WG is also widely used as it provides a cost-effective way of constructing access roads where there is a high concentration of heavy traffic and extremely poor subgrades.

FEATURES ›

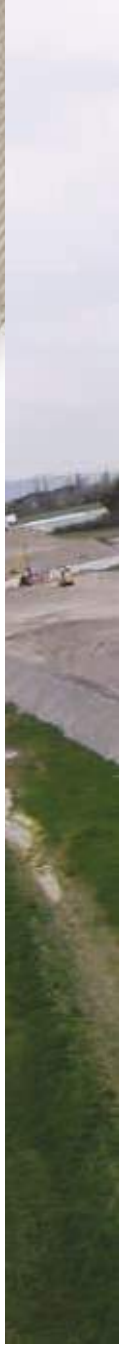
- **Wide rolls** for efficiency
- Provides **separation** and **reinforcement** for roading applications
- **Extensive range** to suit different applications
- **Low** elongation
- **Durable** and **high resistance** to damage

DURAFORCE WG RANGE

Code	Grade	Roll Size	Area
13144	WG14	4m x 50m	200m^2
76250	WG16	5.3m x 200m	1060m^2
13147	WG21	4m x 50m	200m^2
76251	WG30	5.3m x 100m	530m^2
13148	WG60	5.2m x 100m	520m^2
76252	WG80	5.2m x 100m	520m^2
76249	WG100	5.2m x 100m	520m^2
76451	WG150	5.2m x 50m	260m^2

Geoter

POLYESTER (PET) REINFORCEMENT GEOTEXTILE



Geoter WPET and FPET are reinforcement geotextiles made with high tenacity PET yarn, manufactured by warp knitting process.

This range is specially designed for reinforcement of embankments on soft soils, road foundations, supporting structures, fills and slopes.

In addition, the FPET range has a backing of woven polypropylene (PP) geotextile to provide enhanced separation, filtration and protection characteristics.

Geoter provides high strength at low strains and is designed to perform over an extended life span of 100+ years. The Geoter FPET and WPET ranges are NZTA approved and the data sheets detail appropriate factors for design.

Please contact Cirtex® for additional information and design support.

FEATURES ›

- Excellent stress and strain properties for **effective reinforcement** of geotechnical structures
- Available in a **wide range of strengths** up to 1800 kN/m
- **Custom roll lengths** available to **maximise onsite efficiency** and reduce product waste
- 5.3m wide rolls to **reduce overlap** and **reduce cost**
- **Sewn overlap line** to ensure installation accuracy
- **NZTA approved product**

NZ TRANSPORT AGENCY WAKA KOTAHI

GEOTER PET

Range	Strength	Roll Width
W-PET	MD = 100kN/m-1200kN/m	5.3m
	XMD = 30kN/m-100kN/m	5.3m
F-PET	MD = 100kN/m-1800kN/m	5.3m
	XMD = 30kN/m-100kN/m	5.3m

Roll lengths are manufactured in multiples to best suit the project requirements.

EnviroForce

ENVIRONMENTAL PROTECTION GEOTEXTILE

EnviroForce is a UV stabilised, nonwoven, needle punched geotextile.

It is used in many applications for environmental protection, from lining spillways and sediment ponds, to covering stockpiles.

Being black in colour, EnviroForce blends into the natural environment and does not reflect sunlight as traditional white and grey geotextiles tend to. It is recognised by regional councils and local authorities as a suitable product to be used for environmental applications.

Available in 4m x 50m rolls, EnviroForce is easy for contractors to handle on site. EnviroForce is generally secured to the ground using 130mm or 230mm steel ground staples at a frequency of 1 per m².

EnviroForce is used in conjunction with DuraForce® WG21 woven geotextile to create a low permeability spillway and level spreader lining for sediment retention ponds and decanting earth bunds. This restricts soakage into earthwork embankments and reduces the likelihood of embankment instability issues caused by saturation.

APPLICATIONS >

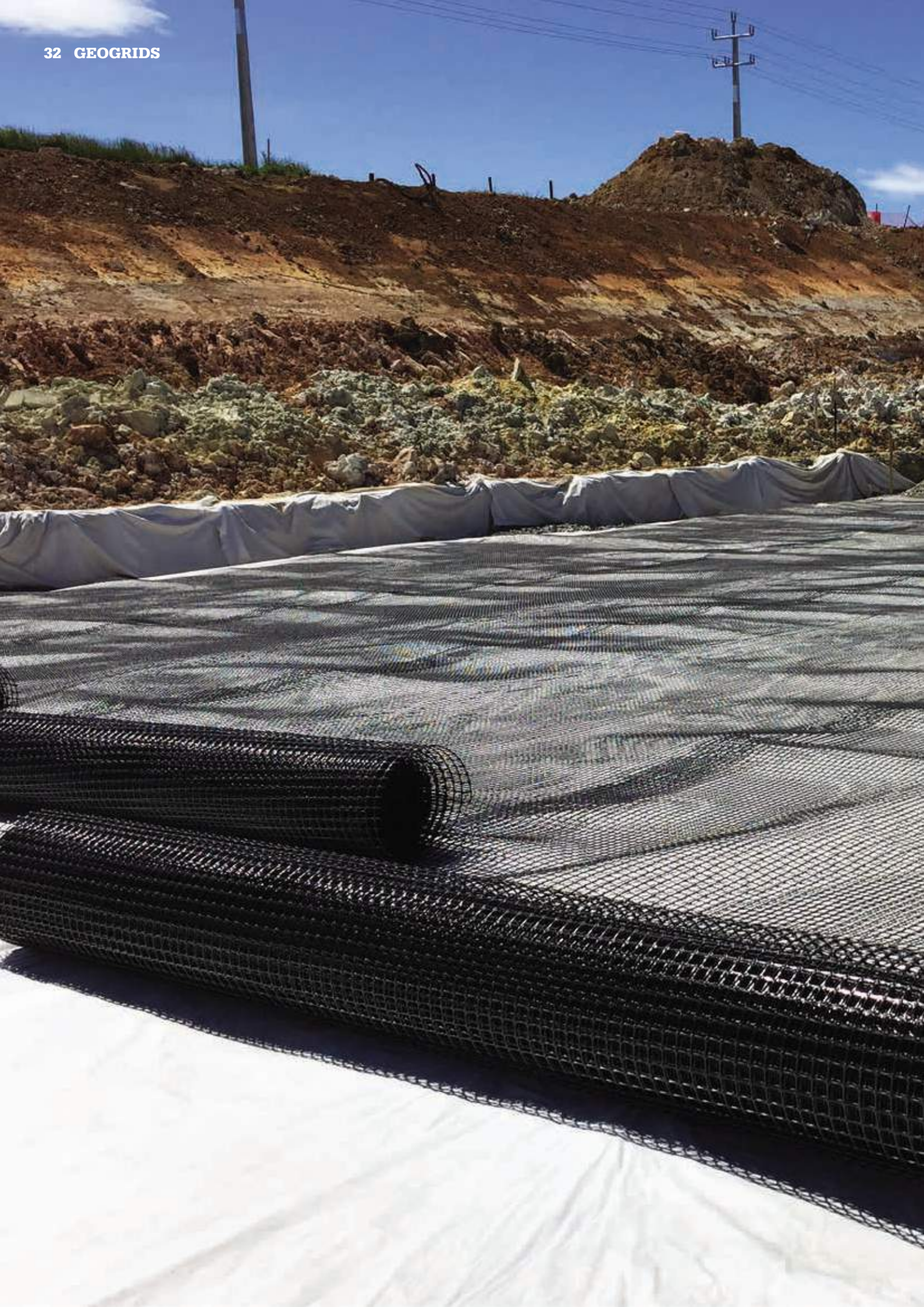
- **Lining** spillways
- **Lining** channels/drains
- **Covering** bunds
- **Covering** stockpiles

FEATURES >

- **Black** to blend in with the environment
- **UV** stabilised
- **Easy to handle** 4m x 50m roll
- **Prevents erosion**

ENVIROFORCE

Code	Grade	Roll Size	Area
13227	EnviroForce S1500	4m x 50m	200m²



GEOGRIDS

StrataGrid®

POLYESTER UNIAXIAL GEOGRID

StrataGrid® is a high performance polyester soil reinforcement grid.

This geogrid is manufactured from polyester yarns that have a high molecular weight and excellent tensile strength. These yarns are then knitted into a dimensionally stable network of apertures to form the geometric grid shape which offers tensile reinforcement to the soil.

StrataGrid is coated with a black saturation coating to provide further chemical and mechanical benefits that enhance its durability in harsh environments.

High strength polyester geogrids are ideally suited to retaining walls, steepened slopes, and embankments subjected to long term creep loads. PET has superior long term creep resistance compared with an HDPE or polypropylene polymer.

StrataGrid is very easy to install and available in wide rolls minimising wastage and labour during installation.

Cirtex® can offer documentation for connection capacity between StrataGrid and a range of segmental block systems available within Australia and New Zealand.

FEATURES ›

NZ TRANSPORT AGENCY WAKA KOTAHI

- **NZTA approved** product
- **Tested in conjunction** with many **modular block systems** including, Allan Block®, Rocklok® and Keystone® block facing
- **Wide rolls** for fast installation
- Many years of local and **international use**
- **Comprehensive data** and **technical back up**

Available in strengths from 40kN/m to 400kN/m and beyond

Tenax 3D

THREE-DIMENSIONAL GEOGRID

Tenax 3D geogrids add a whole new dimension to geosynthetic stabilisation and reinforcement.

Made from a unique extrusion technique, Tenax 3D triplanar grids are an integrally formed geogrid that is specifically shaped to maximise aggregate interlock and improve the composite stiffness of the aggregate/geogrid mass.

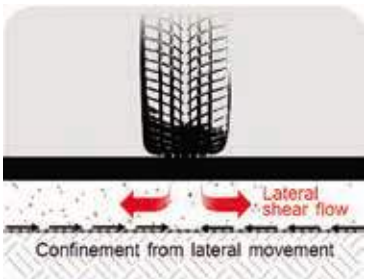
Combining a unique high T shaped rib structure, excellent junction strength and radial stiffness, Tenax 3D geogrids have been proven to provide improved performance in a pavement application, and also excellent composite stiffness performance.

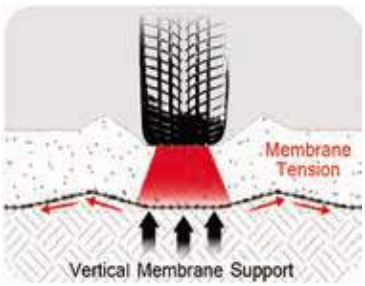
The performance data from full scale testing has been used to produce an excellent pavement design tool which can demonstrate the savings between a stabilised and an un-stabilised pavement section.

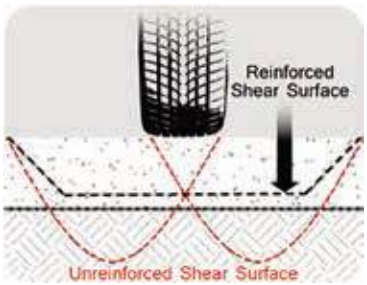
FEATURES >

- Better **aggregate interlock**
- **Excellent aperture** stability
- **Maximize interlocking** within the **aggregate-grid** composite
- **High resistance** to installation damage
- Tested and **proven performance**
- **Cost savings**

TRIPLANAR GEOGRIDS >







SPECIALISED TENAX 3D DESIGN PROGRAM AVAILABLE ON REQUEST

TENAX 3D

Code	Grade	Roll Size	Area
13952	Tenax 3D-T	3.85m x 75m	289m²
13953	Tenax 3D-HT	3.85m x 75m	289m²
56050	Tenax 3D-XL	3.85m x 75m	289m²

DuraGrid X

EXTRUDED BIAXIAL GEOGRID

DuraGrid X polypropylene biaxial geogrids are used in base course reinforcement and subgrade stabilisation applications such as road pavements, reinforced foundations and working platforms on soft soils.

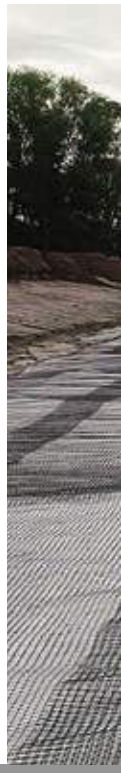
This polypropylene geogrid is well suited to applications that are subject to the impact loads caused by traffic, earthquakes, etc.

The excellent interlocking properties and strength of DuraGrid X ensure its usefulness in reducing layer thicknesses and increasing bearing capacity and pavement life.

DuraGrid X is typically laid directly on the subgrade, and the aggregate layers are placed and compacted on top. Aggregates, which are strong in compression and weak in tension, are therefore mechanically stabilised by the high efficiency interlock and tensile strength of the DuraGrid X reinforcement layer. In applications where the underlying soils are saturated, it is recommended that a DuraForce nonwoven geotextile is placed under the DuraGrid X or the GridTex geocomposite is used. This is to ensure there is separation to prevent the fine particles migrating into the aggregate layer.

FEATURES ›

- Suitable for **reducing aggregate thickness** required in pavement applications
- Good **aggregate Interlock**
- Can be **used with a range of aggregate** sizes
- **High stiffness** for **stabilisation** and **reinforcement**



DURAGRID X

Code	Grade	Roll Size	Area
76253	DuraGrid X 20/20	3.95m x 50m	197.50m^2
13643	DuraGrid X 20/20	5.95m x 50m	297.5m^2
76254	DuraGrid X 30/30	3.95m x 50m	197.50m^2
13639	DuraGrid X 30/30	5.95m x 50m	297.5m^2
76255	DuraGrid X 40/40	3.95m x 50m	197.50m^2

GridTex

GEOTEXTILE / GEOGRID COMPOSITE

GridTex is a geogrid/geotextile composite providing an economical solution to improve the subgrade strength when constructing on soft ground.

GridTex is a combination of DuraGrid X (Page 38) polypropylene geogrid with a nonwoven geotextile, providing both reinforcement and separation. While the DuraGrid X geogrid provides the reinforcement and stabilisation functions, the nonwoven geotextile provides separation and filtration. The combined effect provides a practical solution for dealing with soft subgrades on roads, foundations and working platforms providing both separation and reinforcement in the same roll.

GridTex will save time as it can be laid in a single operation instead of laying geogrid and textile separately.

This product is available in three strength grades to suit a range of applications: 20/20kN/m, 30/30kN/m and 40/40kN/m.

The stronger grades of 30kN/m and 40kN/m are primarily selected to mitigate construction damage from heavy machinery on very soft subgrades.

The 20kN/m grade is more commonly used for firmer subgrades and/or lighter construction equipment and the construction of temporary access tracks to enable access across poor subgrades.

FEATURES >

- **Wide rolls** for efficiency
- Provides **separation** and **reinforcement for roading applications** in one roll
- **Durable** and high **resistance to damage**
- Large **stock holdings nationwide**

GRIDTEX

Code	Grade	Roll Size	Area
13160	20/20	3.9m x 50m	195m²
13159	30/30	3.9m x 50m	195m²
13158	40/40	3.9m x 50m	195m²

HaTelit® & SamiGrid®

ASPHALT REINFORCEMENT GRID

HaTelit® C

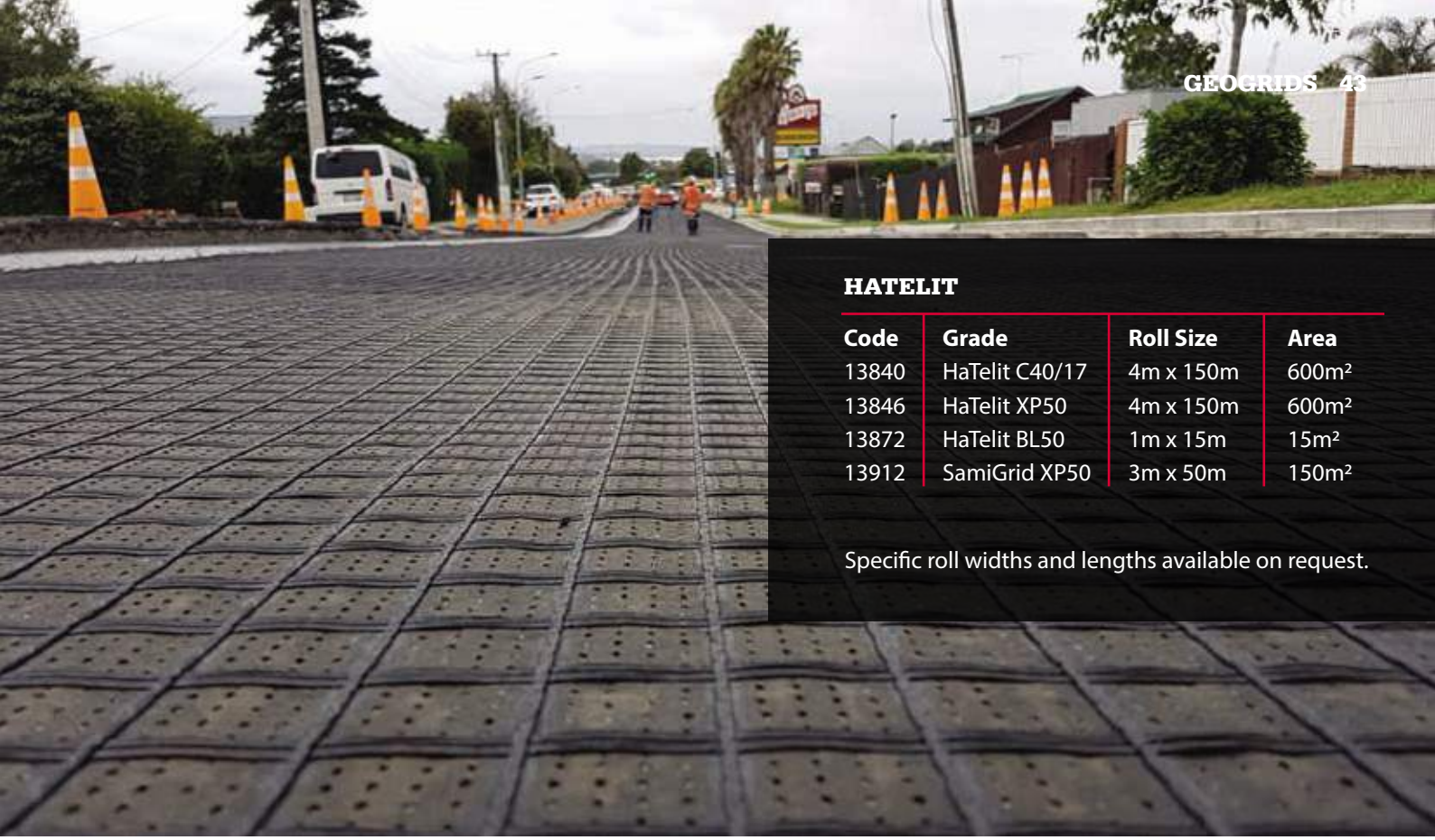
HaTelit C is a flexible composite reinforcing geogrid comprising high modulus polyester grid combined with a ultra-thin nonwoven geotextile. HaTelit C asphalt reinforcement adopts the high stresses developing at the crack tips in the lower asphalt layers and distributes them over a larger area. Through this action the HaTelit C permanently counteracts reflective cracking. HaTelit C has been extensively used in road, airport runways, taxiways and motorways for many years both in New Zealand and around the world. The combination of the high modulus polyester and ultra thin nonwoven geotextiles provides a product that simplifies installation while still allowing excellent bond and interlock between the asphalt layers.

HaTelit XP

HaTelit XP is manufactured from polyvinyl alcohol (PVA) and possesses all the familiar features of the HaTelit C range with the added benefit of being alkali-resistant. This means the reinforcement grid can be installed in environments with a high pH, such as when in contact with concrete or other high alkaline products, making this product particularly versatile in meeting diverse challenges.

SamiGrid®

SamiGrid is a composite product consisting of an asphalt reinforcement grid made from high modulus polyvinyl alcohol (PVA) fibres in combination with a nonwoven fabric. Saturation of the nonwoven with bitumen means that SamiGrid also performs a sealing and stress alleviating membrane interlayer function to complement the reinforcing action of the grid. This combination of materials results in a high performance product that is ideal for the rehabilitation of concrete pavements by using an asphalt overlay. Through the active retardation of reflective cracking, SamiGrid significantly extends the service life of asphalt resurfaced concrete pavements.



HATELIT

Code	Grade	Roll Size	Area
13840	HaTelit C40/17	4m x 150m	600m²
13846	HaTelit XP50	4m x 150m	600m²
13872	HaTelit BL50	1m x 15m	15m²
13912	SamiGrid XP50	3m x 50m	150m²

Specific roll widths and lengths available on request.

HaTelit BL

HaTelit BL is a further development of the tried and tested HaTelit C asphalt reinforcement geogrids suitable for repairing small areas and individual cracks. Manufactured from high modulus polyester yarn laminated with a bitumen sheet the flexible, high tensile, self-adhesive geogrid contributes actively towards retardation of reflective cracking. In addition to the reinforcing action the HaTelit BL through its bounded bitumen backing also performs a sealing function and helps to relieve stresses. This prevents the infiltration of moisture into the lower asphalt layers while reducing stresses caused by temperature changes and traffic loadings.


CAT

ENVIRONMENTAL LINERS

BentoSure

GEOSYNTHETIC CLAY LINER (GCL)

BentoSure GCL is a reinforced need punched geosynthetic clay liner (GCL) which is made by encapsulating a layer of high quality sodium bentonite between two geotextiles.

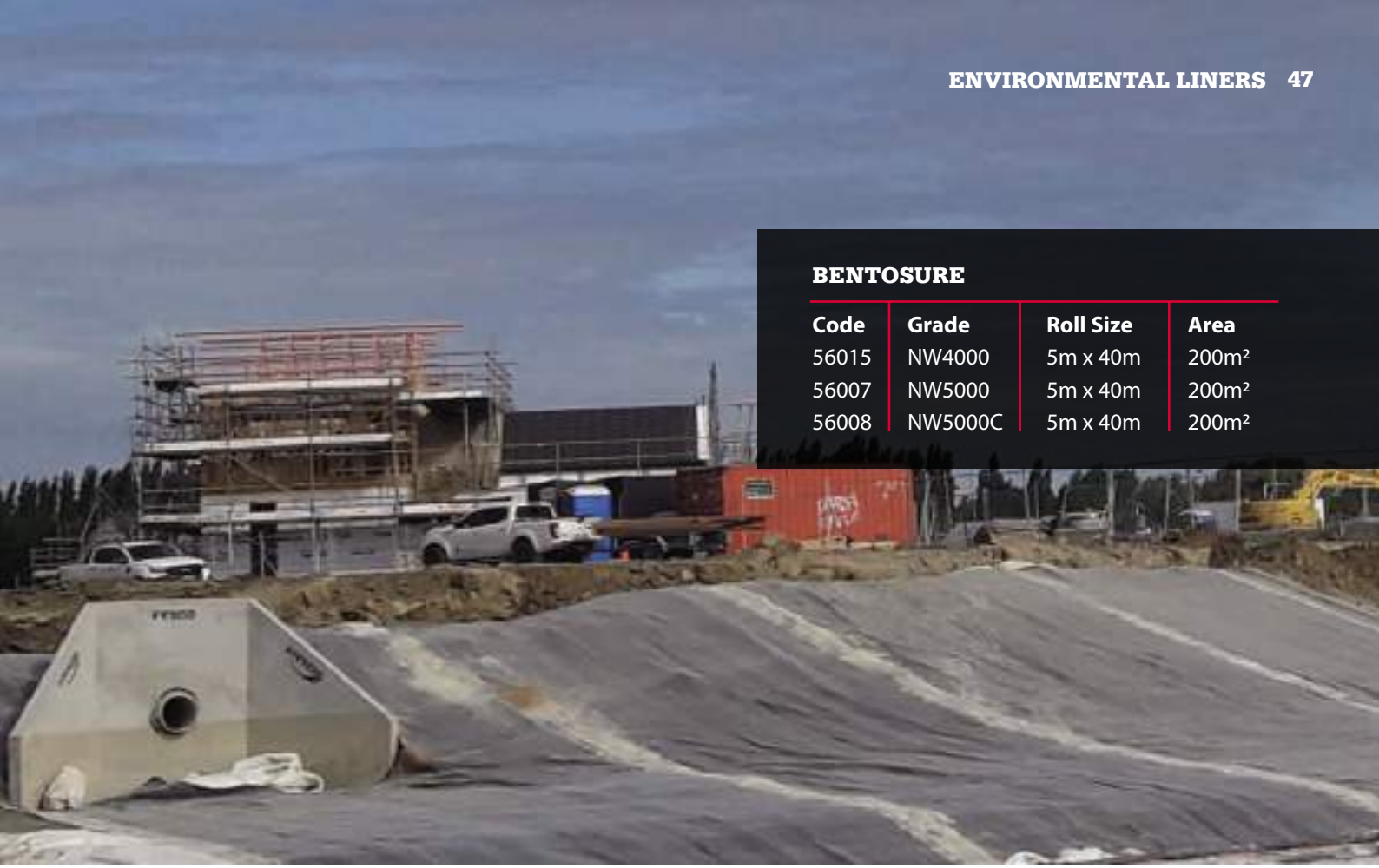
BentoSure GCL is a needle punched, reinforced barrier system that combines two durable geotextile outer layers and a core of high swelling sodium bentonite clay. This forms a uniform, multidirectional, shear resistant hydraulic barrier with self-sealing characteristics. BentoSure can also be supplied with a polymeric membrane attached for additional performance benefits.

Manufactured from strong and durable geotextiles in combination with fine granular sodium bentonite, ensuring the long term performance of the liner. When hydrated, the bentonite swells to form a low permeability layer with the equivalent hydraulic protection of a thick compacted clay layer.

BentoSure is commonly used for water reservoirs, dams and river embankments, liquid waste disposal sites, transfer stations, secondary containment, solid wastes storage and disposal sites where the high performance, guaranteed quality, and ease of installation make it an economical and environmentally responsible option.

FEATURES ›

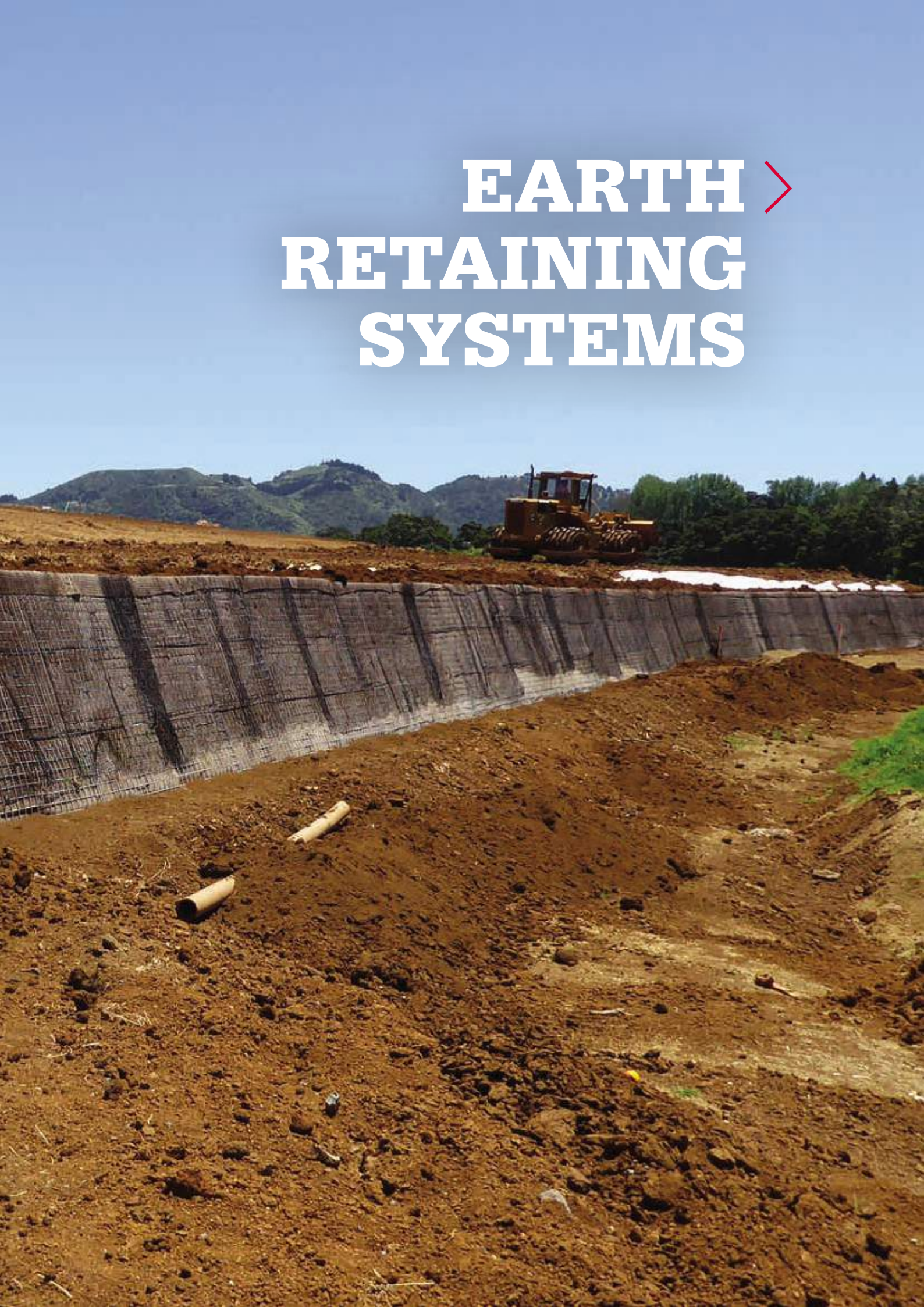
- Utilise the natural swelling properties of **Sodium bentonite to provide a very low permeability**
- **Reduce transport costs and emissions** by reducing the cartage of clay to site
- **Robust polypropylene geotextile** encapsulates and contains the bentonite
- **High shear strength** and interface friction angles from the needle punch process
- Quick, easy and **cost effective to install**
- **Self seeming overlap** technology



BENTOSURE

Code	Grade	Roll Size	Area
56015	NW4000	5m x 40m	200m²
56007	NW5000	5m x 40m	200m²
56008	NW5000C	5m x 40m	200m²

EARTH RETAINING SYSTEMS



DuraSlope

REINFORCED SOIL SYSTEM

The DuraSlope system is for slopes up to 45˚, utilising primary structural geogrids for internal stability of the slope.

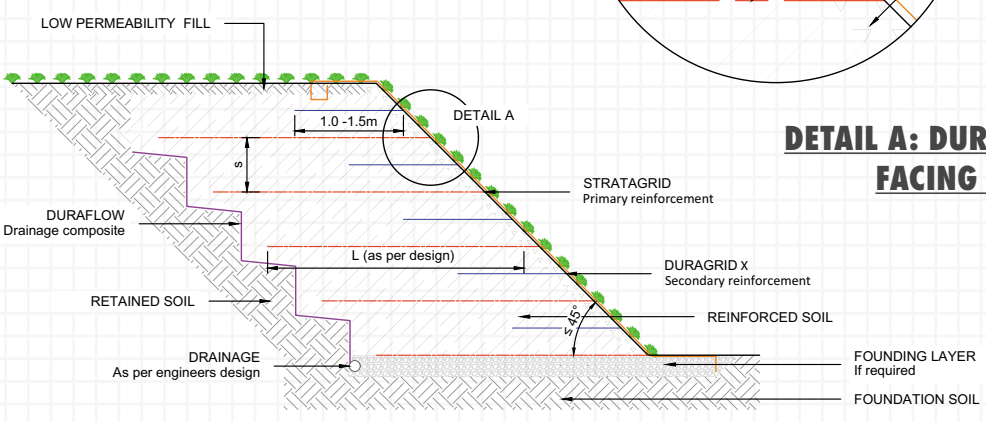
The DuraSlope system will often incorporate a permanent Turf Reinforcement Mat (TRM) laid over the slope surface to prevent erosion and promote vegetative growth at the face.

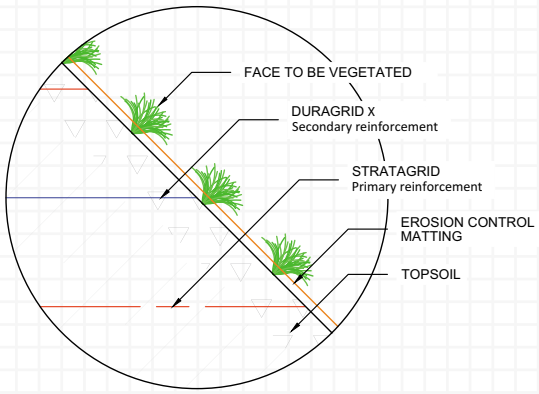
Reinforced soil walls, also called Mechanically Stabilised Earth Walls (MSEW), are becoming increasingly popular as an economical and effective solution for steepened slopes and retaining walls.

Each DuraSlope reinforced soil system component is individually selected and engineered to work together to provide a structurally sound long term solution. All structural elements are manufactured to strict ISO 9001 procedures and quality assurance data is available to the engineer as required.

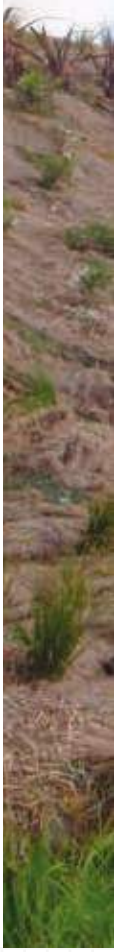
Cirtex® can provide design support using the latest slope reinforcement and MSEW programs. Cirtex also provides plans and methodologies in CAD format customised to suit your project. This is available either as a concept service free of charge or as a complete service with producer statement provided. Some costs would be incurred if a producer statement is required.

DURASLOPE TYPICAL CROSS SECTION





DETAIL A: DURASLOPE FACING SYSTEM



FEATURES

- **Fast construction**
- **Increases usable land**
- **Naturally vegetated**
- **Variable face angles**
- **Environmentally friendly**
- **Proven and reliable** technology
- **Design** and **construction support**

DuraSlope reinforced soil system uses:

- StrataGrid® geogrid (primary geogrid)
- DuraFlow Q drainage composite
- BioCoir BC450JR or ECC3 TRM
- DuraGrid X biaxial geogrid (secondary geogrid)

DuraGreen

REINFORCED SOIL SYSTEM

The DuraGreen is a vegetated reinforced soil wall system, also called Mechanically Stabilised Earth Wall (MSEW), that is a proven engineered solution for slopes up to 70˚.

DuraGreen is a cost-effective and fast method to build MSEW systems and consists of StrataGrid® PET geogrid and soil filled facing socks or bags. The facing forms the correct angle and provides a medium for vegetation to establish.

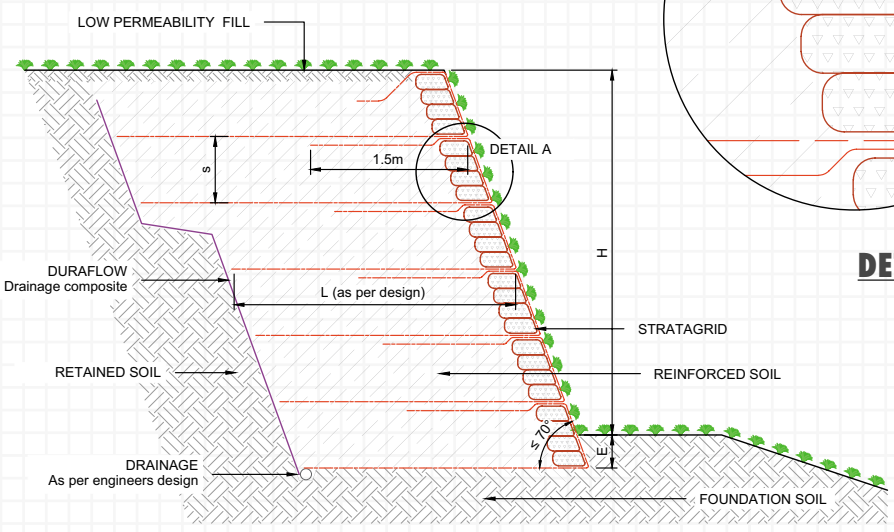
StrataGrid is wrapped around the face to form the face angle, bags or socks filled with soil are used which provides a medium for vegetation to establish in.

MSEW's are becoming increasingly popular as an economical and effective solution for steepened slopes and retaining walls.

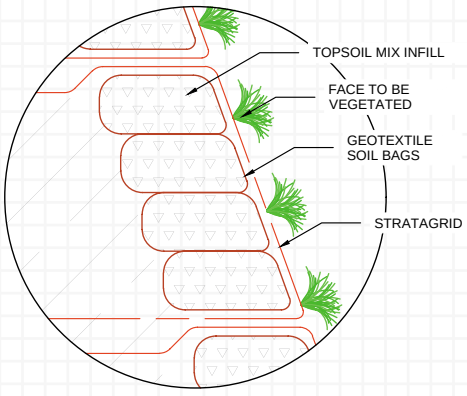
Each DuraGreen Reinforced Soil System component is carefully selected and engineered to work together to provide a structurally sound long term solution.

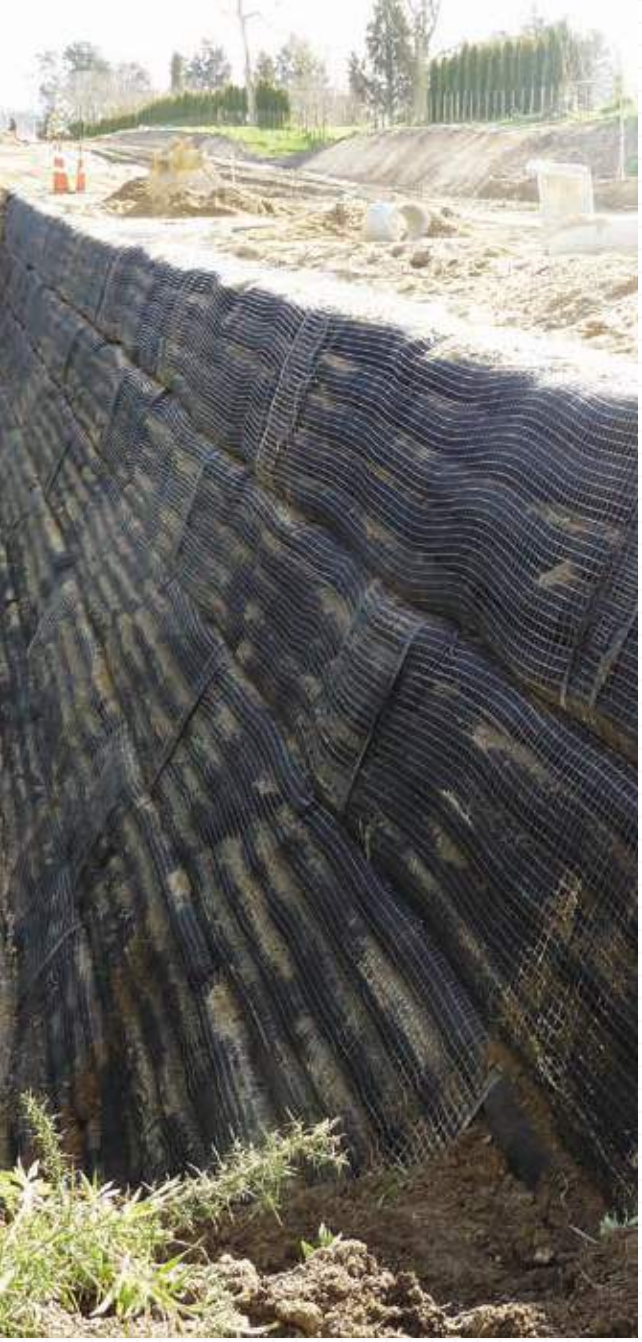
Cirtex® can provide design support using the latest slope reinforcement and MSEW programs. Cirtex also provides plans and methodologies in CAD format customised to suit your project. This is available either as a concept service free of charge or as a complete service with producer statement provided. Some costs would be incurred if a producer statement is required.

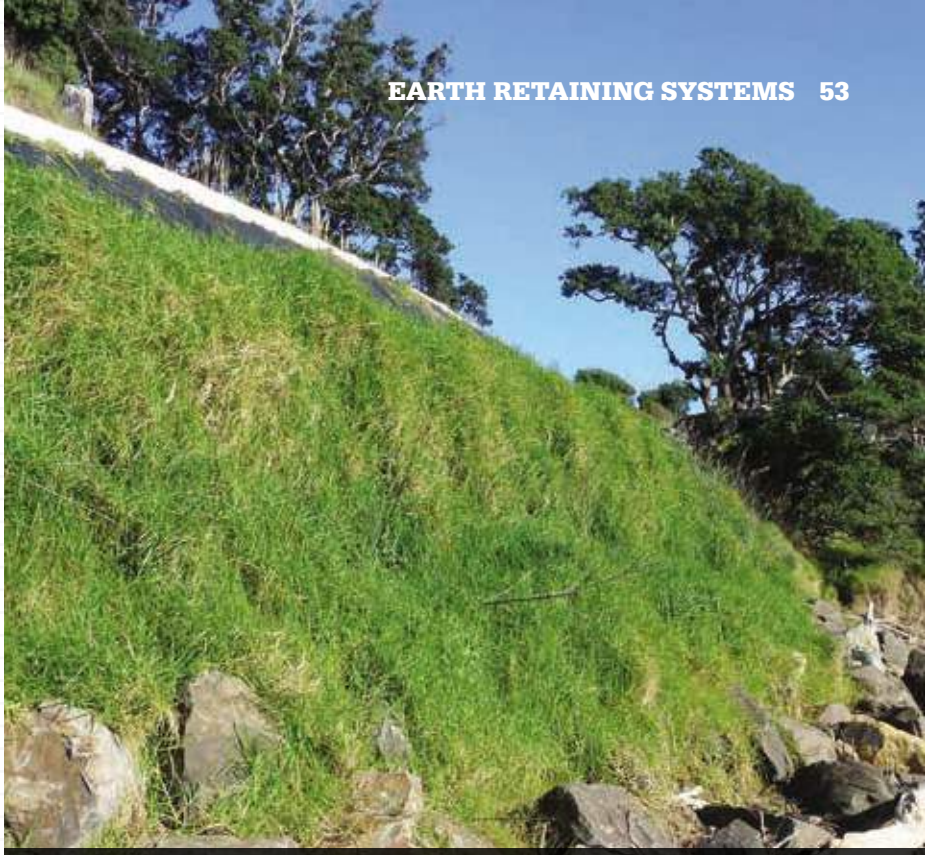
DURAGREEN TYPICAL CROSS SECTION



DETAIL A: DURAGREEN FACING SYSTEM







DURAGREEN

	Code	Product	Size
A	13681	DuraGreen Soil Filled Bags	800mm x 400mm
B	76738	DuraGreen Sock	250mm - made to order

DuraGreen reinforced soil system uses:

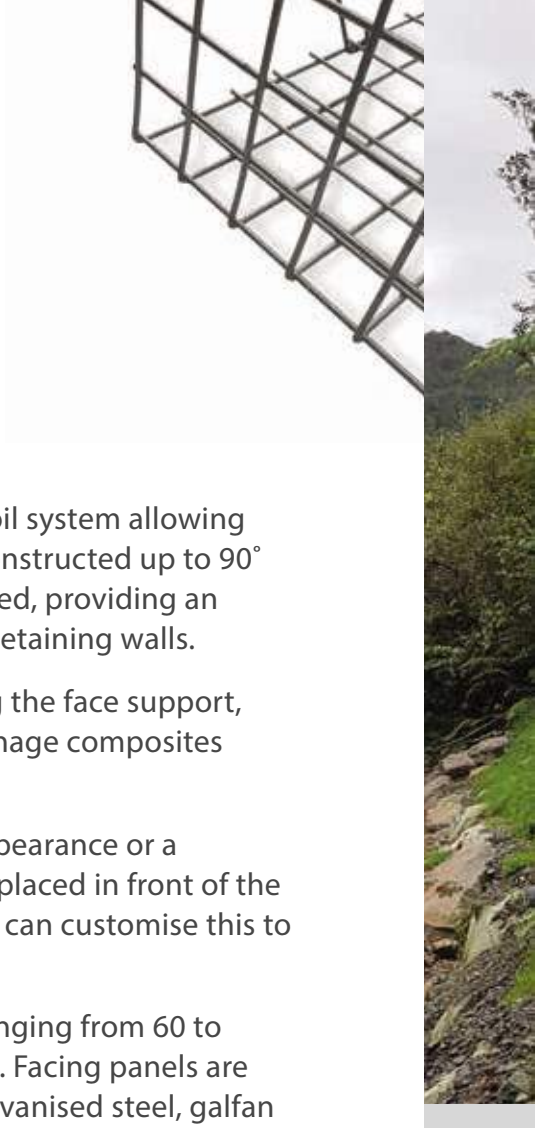
- StrataGrid® geogrid (primary geogrid)
- DuraFlow Q drainage composite
- BioCoir BC450JR or ECC3 TRM
- DuraGrid X biaxial geogrid (secondary geogrid)

FEATURES >

- **Fast construction**
- **Increases usable land**
- **Naturally vegetated**
- **Variable face angles**
- **Environmentally friendly**
- **Proven and reliable** technology
- **Design** and **construction support**

A DURAGREEN SOIL FILLED BAGS

B DURAGREEN SOCK



DuraMesh®

REINFORCED SOIL SYSTEM

The DuraMesh® system is a proven, engineered, reinforced soil system allowing MSE (Mechanically Stabilised Earth) walls and slopes to be constructed up to 90˚ with different visual appearances, from vegetated to rock faced, providing an economical and effective solution for steepened slopes and retaining walls.

The system consists of the DuraMesh facing panels providing the face support, StrataGrid® PET reinforcement geogrid, and DuraFlow Q drainage composites providing drainage at the back of the MSE mass.

The facing can be vegetated, stone face for a gabion type appearance or a geotextile wrap when there is a concrete facing panel being placed in front of the MSE wall. Cirtex® offers typical plans and methodologies and can customise this to suit your project.

DuraMesh is available in a number of different face angles ranging from 60 to 90 degrees available to meet the requirements of the project. Facing panels are available in a range of materials and coatings: black steel, galvanised steel, galfan + PVC coated steel and stainless steel to meet requirements of the different design service life. Each DuraMesh reinforced soil system component is individually selected and engineered to work together to provide a structurally sound long term solution.

Cirtex can provide design support using the latest slope reinforcement and MSEW programs. Cirtex also provides plans and methodologies in CAD format customised to suit your project. This is available either as a concept service free of charge, or as a complete service with producer statement provided. Some costs would be incurred if a producer statement is required.

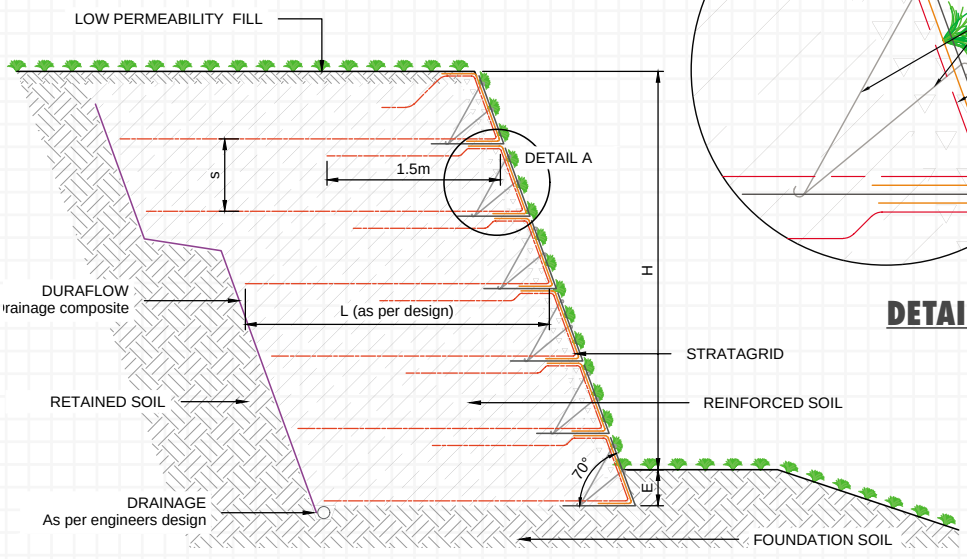
FEATURES ›

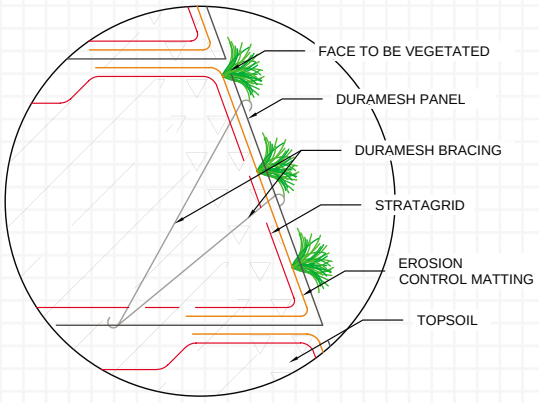
- **Fast construction**
- **Increases usable land**
- **Naturally vegetated** or stone faced
- **Variable face angles**
- **Environmentally friendly**
- **Proven and reliable** technology
- **Design** and **construction support**

DuraMesh reinforced soil system uses:

- DuraMesh facing panels
- StrataGrid® geogrid
- DuraFlow Q drainage composite
- BioWool or BioCoir

DURAMESH TYPICAL CROSS SECTION





DETAIL A: DURAMESH-FACING SYSTEM

DuraMesh®

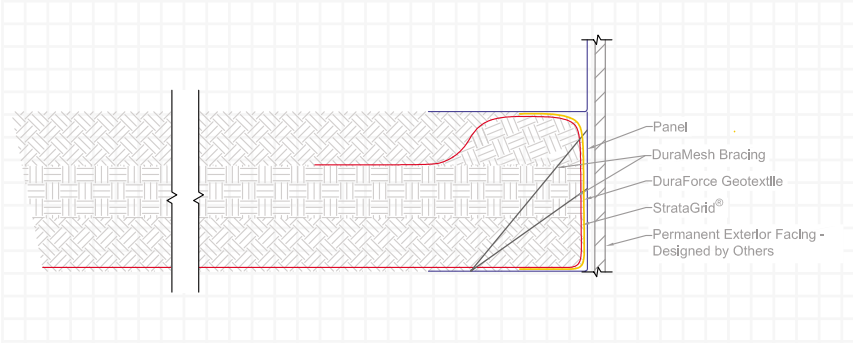
VENEERED APPLICATIONS

The DuraMesh® Mechanically Stabilised Earth (MSE) system can be very effectively used in retaining wall and bridge abutment applications where a decorative concrete tilt panel or other veneer finish is desired.

In veneered applications, the standard DuraMesh system primary components are utilised including DuraMesh galvanised facing panels, the StrataGrid® PET reinforcement geogrid, DuraFlow Q, drainage composite and DuraForce® geotextile to provide a separation layer inside the panels to contain the MSE wall granular backfill.

The DuraMesh MSE system is a solution that is very fast and easy to construct and will provide a more dimensionally accurate and tidier finish when compared with traditional MSE facing methodologies including sand bags and shutters.

Cirtex can provide MSE design assistance and can customise the DuraMesh components to suit the height and finished angle of the wall which typically ranges between 60 and 90 degrees.



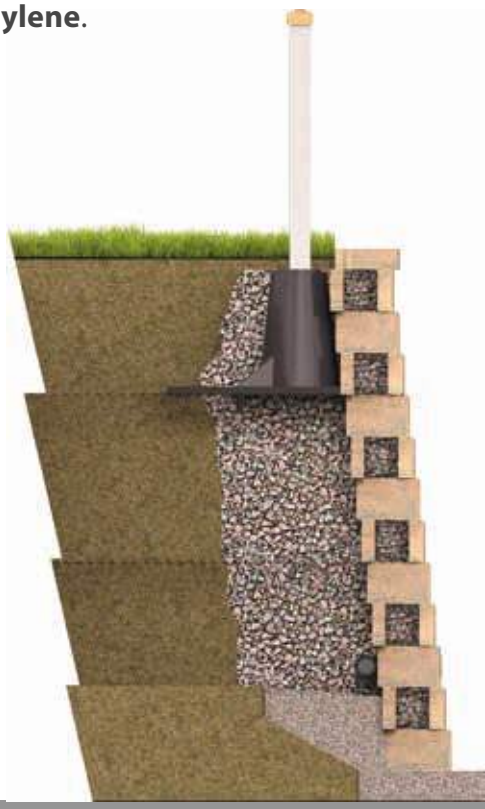
Sleeve-It®

POST ANCHORING SYSTEM

Sleeve-It® SD-1 is a pre-engineered fence post anchoring solution for enhancing below-grade foundational stability in fences placed on top of a segmental retaining wall (SRW). Sleeve-It's patent pending design allows stable fence footings to be integrated into the support structure of the SRW while it is being constructed. Due to it's cantilevered form and other properties, using Sleeve-It during the SRW build allows a fence to be built close to the wall edge, eliminating the need for a setback.

FEATURES >

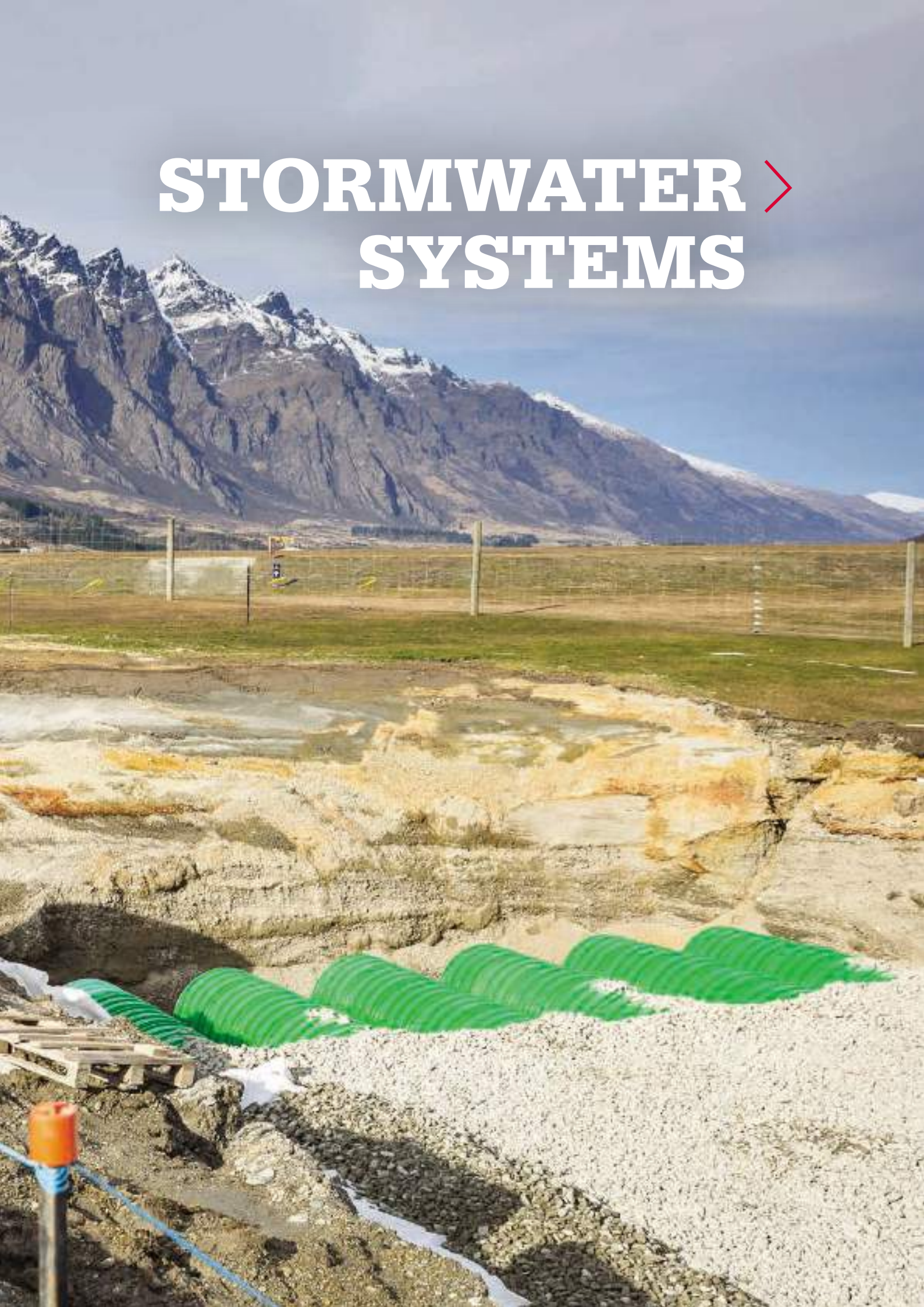
- Sleeve-It is **compliant with IBC 1015.2**, **IBC 1607.8.1** and **ASCE 7 4.5.1**.
- **Eliminates** the offset **requirement for rails and fences within 900mm** of the edge of the open side of a SRW.
- Lightweight, unitary design makes Sleeve-It **easy to stack, store and transport to job sites** – reducing stocking space, shipping costs and labour requirements.
- Seamlessly **integrates into the SRW construction** process and eliminates the hassle of auguring once the wall is complete.
- Sleeve-It is designed to **accommodate** the most **common SRW fence types**.
- Sleeve-It is **made with** ~95% post-consumer **recycled polypropylene**.

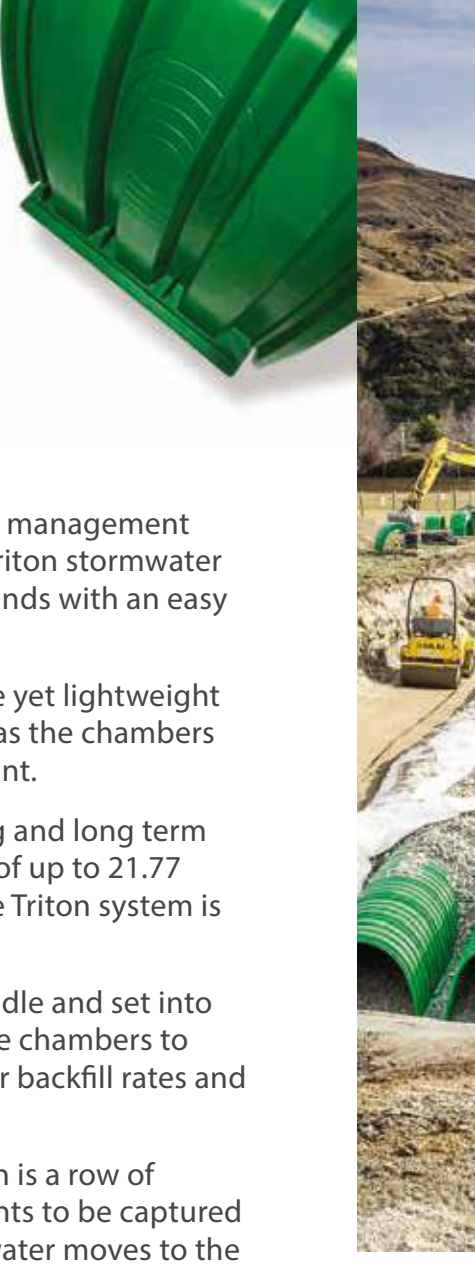


SLEEVE-IT

Code	Product
13805	Sleeve-It

STORMWATER SYSTEMS





Triton

STORMWATER CHAMBER SYSTEM

The Triton stormwater system is suited for subsurface stormwater management including infiltration, retention, detention and conveyance. The Triton stormwater system offers developers the tools they need to meet these demands with an easy to use underground system that saves time and money.

This system combines eco-friendly materials with an ultra durable yet lightweight design that is easy to install and maintain. It also saves on space, as the chambers can be double-stacked in many applications, reducing the footprint.

Triton offers excellent resistance to both short term traffic loading and long term dead loads. The Triton system is rated to withstand axle loadings of up to 21.77 tonnes and can be buried with up to 15m of soil over-burden. The Triton system is backed by a comprehensive manufacturers guarantee.

The chambers, constructed from soy based resins, are easy to handle and set into place. The interlocking design allows for a quick connection to the chambers to create the required row lengths. Their strength allows for speedier backfill rates and shallower depth requirements than competitive products.

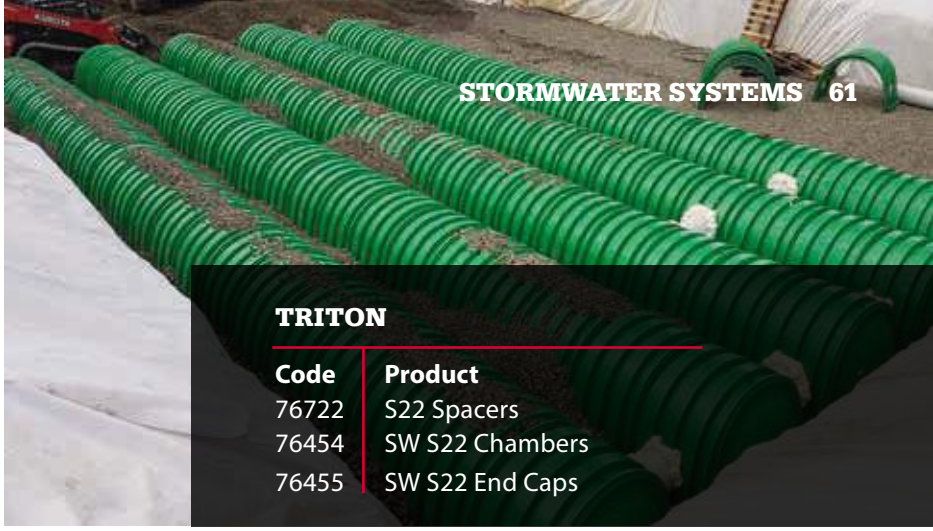
Triton utilises the innovative self-flushing Main Header Row which is a row of chambers orientated between two manholes. This allows sediments to be captured on the woven geotextile scour-protection matting before stormwater moves to the distribution rows, thus preserving the infiltration capacity of the soil. The manholes and the Main Header Row can be easily maintained using regular hydro vacuuming methods.

System sizing tools and standard CAD drawings in dwg. and pdf. are available for the Triton stormwater system.

MODEL S-22
1397mm W x 889mm H x 762mm L.
12.7kg
Bare Chamber Storage 0.611m^3

MODEL S-22 END CAP
Bare End Cap Storage 0.11m^3

MODEL S-22 MHR SPACER
Used on the MHR to ensure correct alignment of the chambers.



TRITON

Code	Product
76722	S22 Spacers
76454	SW S22 Chambers
76455	SW S22 End Caps

FEATURES ›

- **Lightweight** chambers that are just **12.7kg each** making them a one man lift
- Exceeds the latest AASHTO LFRD Bridge Design Spec 1. Test validate chambers withstand a **rear axle load of 21.77 tonnes**
- **Deep installation**. Triton chambers can be **installed with up to 15m of soil cover** due to their excellent resistance to long term creep.
- Made from eco-friendly soy-oil based resin. **Can achieve up to 21 LEED credits**
- **Cost-effective** and has **lower shipping costs**. Fewer labour hours per cubic meter. Soy oil based, a more stable cost than petroleum based.

Triton Vault

STORMWATER CHAMBER SYSTEM

Once again, Triton raises the bar with the introduction of the revolutionary Vault system – this innovative 5 component system uses the classic roman groin vault for superior strength, in addition to end caps, trays, close offs and locks, to create a stormwater system like no other. Its improved interior storage capacity per square metre, endless design flexibility, unparalleled strength and its ability to reduce stone costs up to 70% makes the Vault system the must have stormwater system on the market.

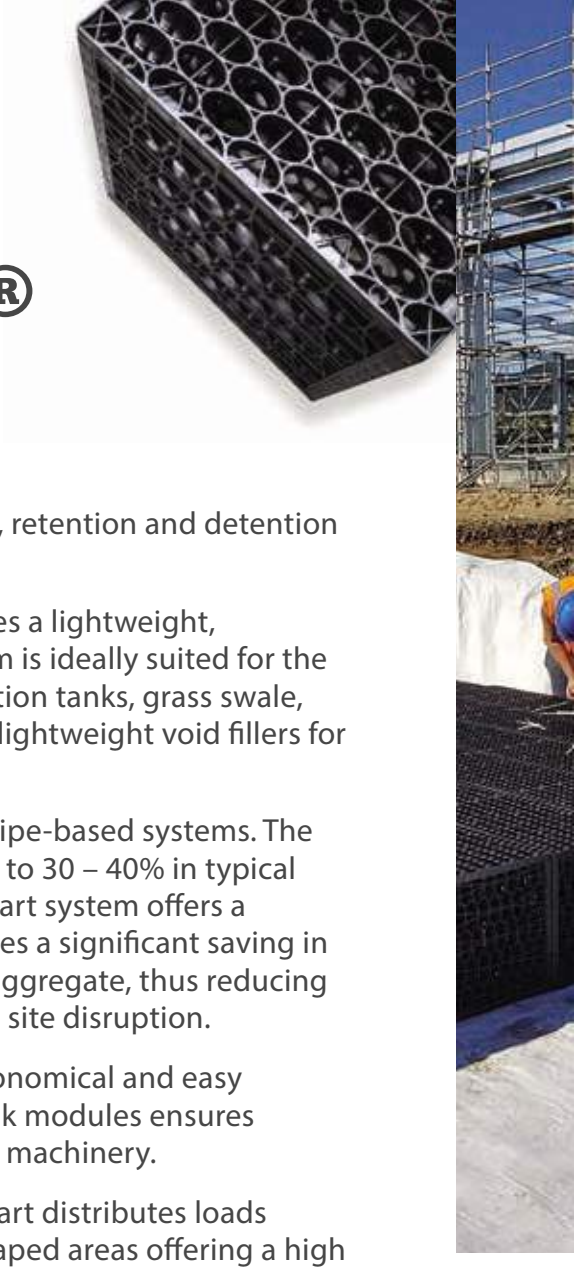
Triton Vault gives you all the benefits of the Triton Chamber system with the addition of greater storage volume and greater design flexibility

FEATURES ›

- **Environmentally friendly** soy based resin
- Endless **configurations** to **adapt to site constraints**
- Superior maintenance options with **adaptable header row configurations**
- **Can be built around obstructions** such as trees and light poles
- **High structural capacity**
- **Can be double stacked** for **greater volume** per square metre of footprint

TRITON VAULT

Code	Product
13926	Triton Vault VLT 4700
13927	Triton Vault Tray
13929	Triton Vault Lock
56033	End Cap (Small)
13928	End Cap (Large)
13930	Triton Vault Lock (Close Off)



RainSmart®

STORMWATER MODULES

The RainSmart® system is suited for subsurface infiltration, retention and detention stormwater applications.

Manufactured using recycled materials, RainSmart provides a lightweight, structural component to an engineered design. The system is ideally suited for the construction of underground infiltration, retention, detention tanks, grass swale, subsurface interception channels, septic leach drains and lightweight void fillers for roof garden and planter box applications.

The RainSmart system supersedes traditional gravel and pipe-based systems. The system provides a void space ratio of over 95%, compared to 30 – 40% in typical gravel and pipe based systems. Consequently, the RainSmart system offers a smaller footprint for the same storage volume. This provides a significant saving in the amount of excavation, soil transport, imported clean aggregate, thus reducing earthworks related installation costs and causes minimum site disruption.

Modules are available in kit form, making transporting economical and easy to handle. The lightweight and stackable nature of the tank modules ensures installation is quick and easy, eliminating the use of heavy machinery.

With a modular design and structural capabilities, RainSmart distributes loads evenly and allows for usage in both trafficable and landscaped areas offering a high safety factor. The design also enables the user to create any shape and size of the underground stormwater structure, without disturbing the surrounding site and maximising land use.

RainSmart systems constructed with linear access pipes are invaluable for inspection and maintenance purposes. This allows the designer to efficiently control the build up of sediments in the tank and for flushing the system if ever required.

System sizing tools and standard CAD drawings in dwg. and pdf. are available for the RainSmart system on request.

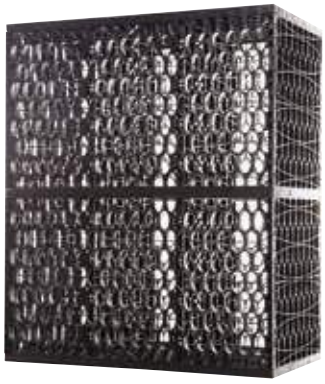
RAINSMART MODULES

Code	Product	Size	Modules/m³*
76349	5 Plate Tank Single	0.715 x 0.4 x 0.44	8.37
76354	5 Plate Tank Double Layer	0.715 x 0.4 x 0.86	4.28
13635	5 Plate Tank Triple Layer	0.715 x 0.4 x 1.28	2.88
13666	5 Plate Tank Quad Layer	0.715 x 0.4 x 1.7	2.16
56165	5 Plate Tank Penta Layer	0.715 x 0.4 x 2.12	1.74

*Modules required per 1m³ of stormwater storage, considering a 95% void ratio. 4 and 7 plate options available.

FEATURES

- A **robust** yet **lightweight system** that is simple to install without specialised equipment
- **Environmentally friendly**
- **Recharges groundwater table** through infiltration
- **Mitigation of** downstream **flooding**
- **Removes** the need for **above ground ponds and tanks** that use valuable space and create health and safety risks
- RainSmart linear access systems offer an **economical and low maintenance system**
- **Modular structure** for design flexibility
- **Trafficable** when installed with ≥ 600mm pavement cover



RainSmart®

DRAINAGE CELL

RainSmart® Drainage Cell is a light weight three-dimensional drainage panel with a high load-bearing capacity, used for subsurface water management.

RainSmart Drainage Cell provides a perfect solution for subsoil drainage and gas collection systems, as well as low impact design and weight sensitive applications such as roof gardens. The drainage cell offers a uniform surface along with an internal void space for effective drainage of excess water. It will also provide drainage behind concrete panels, concrete block and timber retaining walls. When used in roof garden applications it provides water retention for passive irrigation, helping to build a perch water table in the above soil profile for the vegetation to flourish during prolonged dry periods.

Made from recycled polypropylene, RainSmart Drainage Cell is inert to soil borne chemicals and bacteria. RainSmart cells shallow and effective drainage profile helps landscapes to make use of mature plants on roof gardens that need soil depth and water retention properties.

High summer temperatures can cause thermal expansion in concrete and lead to waterproofing cracking. The unique design of the RainSmart Drainage Cell and its void properties helps this heat to escape, reducing the risk of cracking and so enhancing the life of buildings.

This product is environmentally friendly, made from selected recycled polypropylene that recharges the groundwater table through the principle of infiltration when used on any natural ground surface. It has a unique diamond cup structure.

Deck loads are reduced, weighing only 3.2 kg/sqm compared to 250 kg/sqm of gravel for the same effective drainage.

RainSmart Drainage Cell provides a cost-effective and easy to install choice over alternative and traditional aggregate drainage layers used in retaining wall applications. It will reduce the thickness by up to 75% owing to the high void ratio of the RainSmart cell. It is also a lot simpler and faster to install, allowing large areas to be prepared for backfilling without the need to import different aggregates (backfill and drainage aggregate) into the same backfilling process.

RAINSMART CELL

Code	Size	Product Plate
76284	0.6m x 0.5m	30mm (Plates)
76285	0.6m x 0.5m	50mm (Plates)

FEATURES

- High compressive **load carrying capacity of up to 140 tons/m²**
- **High lateral flow capacity**
- **Maintains actual void size** for **effective drainage** after backfill and compaction
- **Thin which reduces depth of cover** and the use of mature planting in shallow conditions is enabled
- **Holds and creates a perch water table**, providing ideal moist conditions for plant growth
- **Reduces hydrostatic forces** upon sub-grade walls
- **Alternative to costly** and **heavy drainage aggregate** saving in cost and reducing weight on building structures in roof gardens

SmartSoak®

RESIDENTIAL STORMWATER SYSTEM

Presenting a new way to deal with stormwater runoff from residential properties. In a smart, easy and cost-effective kit, the SmartSoak® system contains all the components needed to attenuate stormwater from an individual residential site. Hidden underground, SmartSoak stores runoff from the impermeable surfaces in a series of modules wrapped in a geotextile fabric where it slowly soaks away into the surrounding soils and/or is released through an orifice.

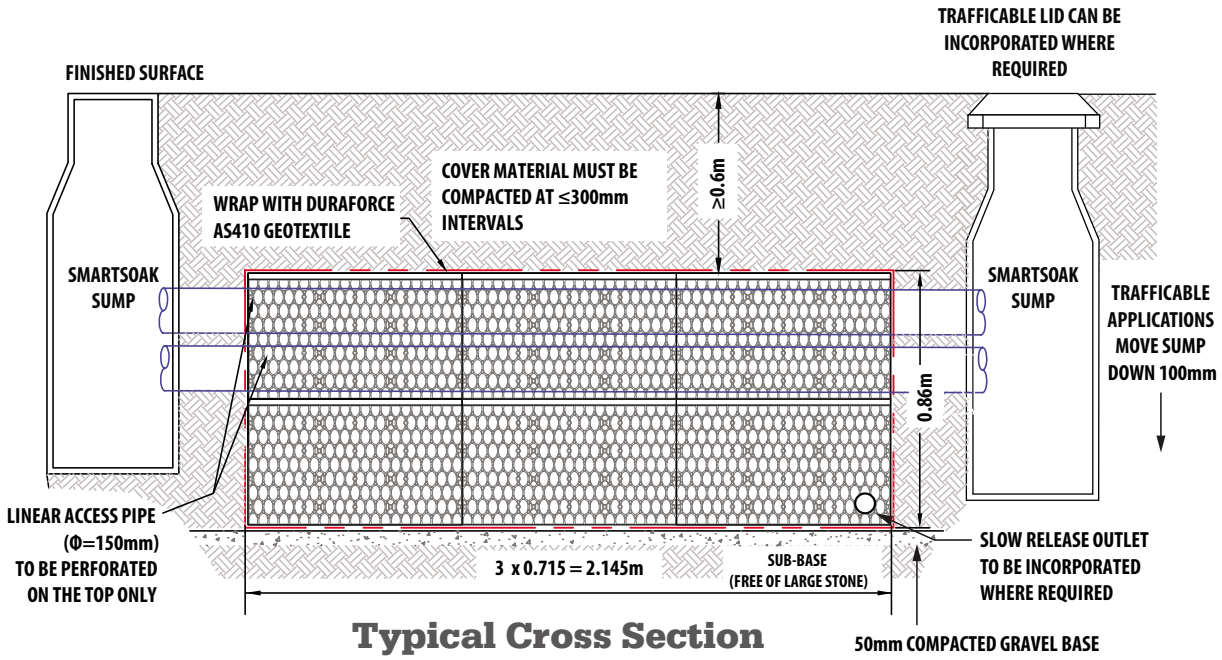
Using the innovative 'Linear Access' pipes, SmartSoak prevents the first flush from entering the modules, therefore reducing sedimentation.

SmartSoak boasts a 95% void ratio compared with traditional soakage aggregate pits with a void ratio of 30-40% which are not able to be maintained.

The SmartSoak modules are pre-approved by councils* which streamlines the consenting process of the developer and project engineer.

Available in four standard sizes to suit property requirements, the SmartSoak system can be easily installed anywhere on the property. The modules can support traffic loadings when installed in accordance with the manufacturer's instructions.

SMARTSOAK LINEAR ACCESS



Typical Cross Section

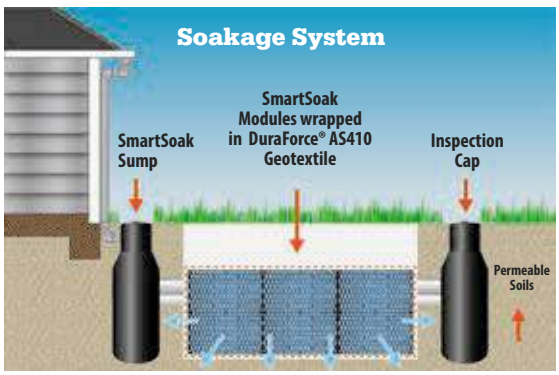
*SmartSoak stormwater modules are pre-approved for use with Auckland and Hamilton City councils, subject to engineered design.

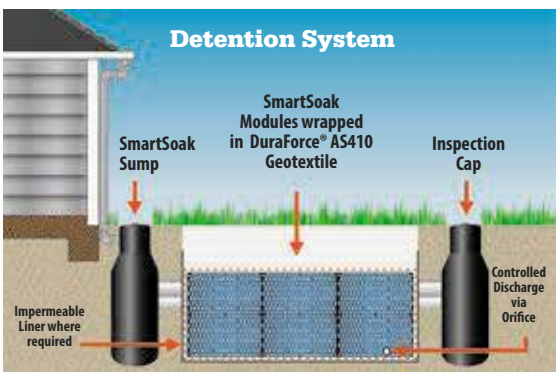
SMARTSOAK SWS KIT

Code	Product	Tank Size	Modules
13281	3.5m³ System	2.0m x 2.145 x 0.86	15
13085	5m³ System	2.8m x 2.145 x 0.86	21
13086	7m³ System	4.0m x 2.145 x 0.86	30
13087	10m³ System	5.2m x 2.145 x 0.86	42

FEATURES

- **Fully trafficable** system when installed ≥ 600mm of pavement cover
- **Quick** and **easy to install** by any drainage contractor
- 95% void rate allows **efficient use of space**
- **Linear access system** allows **ease of maintenance** for years to come





SUBSOIL DRAINAGE

Filter Sleeve™

CIRCULAR KNITTED FILTER

Filter Sleeve™ is a tested and proven solution for protecting subsoil drains from sedimentation.

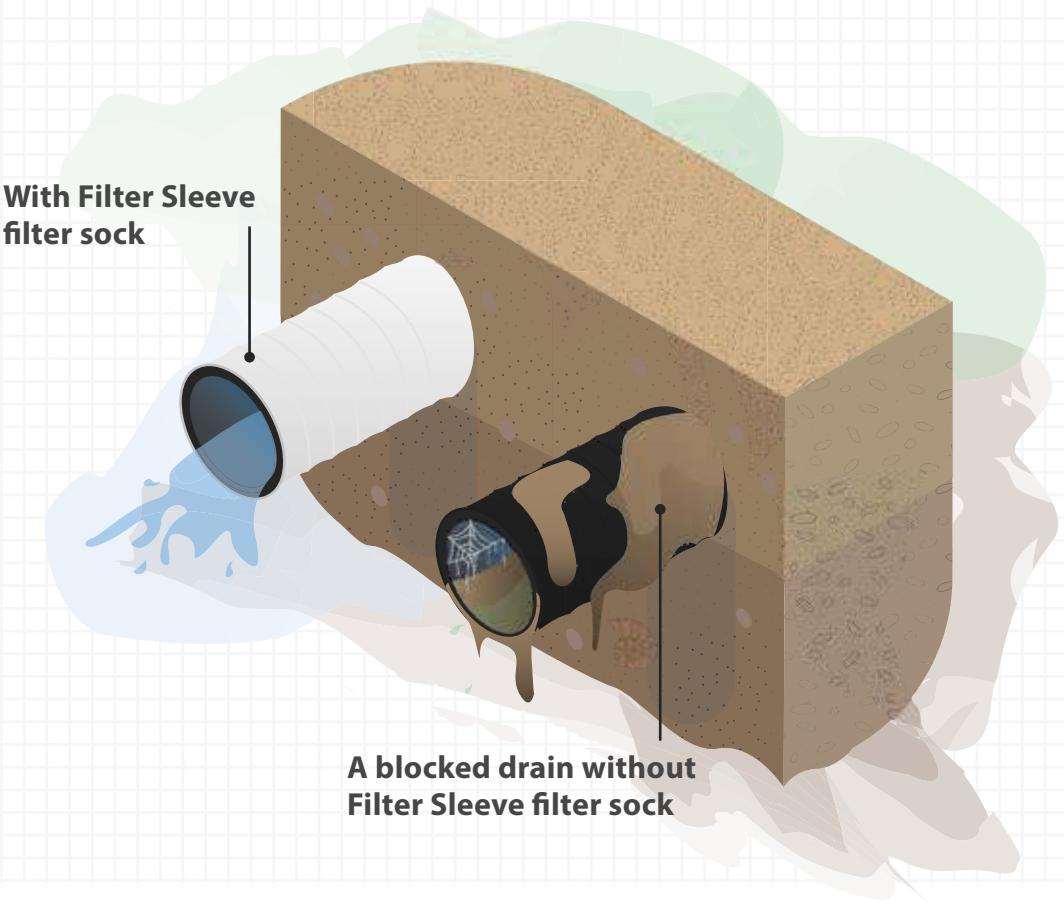
It is a readily available, cost-effective and proven filter making it an ideal choice for protection of perforated pipe.

Manufactured as a three-dimensional knitted fabric, Filter Sleeve is supplied in a seamless length to fit the broad range of pipe sizes available.

The product works by trapping the soil particles and assisting the formation of a soil filter around the pipe.

Produced in New Zealand, Cirtex® uses strict ISO 9001 quality controlled certified procedures as the performance of the product is dependent on the accurate formation of the knit structure and pore sizes. Choose Cirtex Filter Sleeve for dependable results.

Filter Sleeve is fitted to the pipeline on site using preloaded applicators or it may be purchased pre-installed from leading pipe manufacturers.

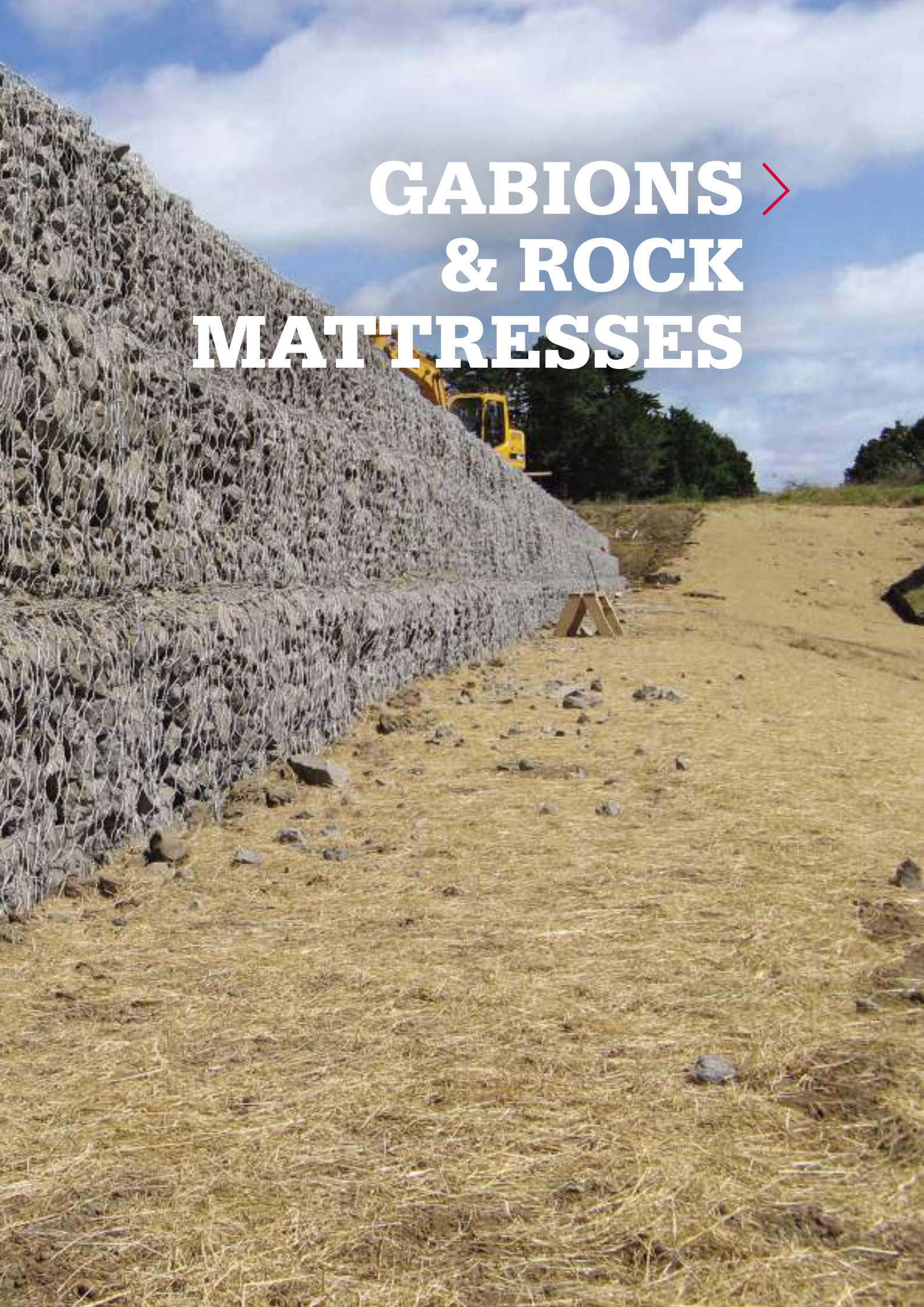


FILTER SLEEVE

Code	Grade
76006	65mm x 15m PreLoaded
76005	65mm x 30m PreLoaded
76003	110mm x 15m PreLoaded
76000	110mm x 30m PreLoaded
76001	110mm x 50m PreLoaded
76002	110mm x 100m PreLoaded
76004	160mm x 45m PreLoaded
76036	200mm x 30m PreLoaded

FEATURES >

- **Extends the service life of perforated drain** systems by filtering out silt and sand
- **Quick and easy to apply** with a preloaded disposable applicator
- **Constructed from** a durable and **seamless synthetic fabric**
- **Meets RMS specification** standard 3553
- **Available in four sizes** to fit 65mm, 110mm, 160mm and 200mm drainage pipe
- The most **cost-effective** way of protecting subsoil drains



GABIONS & ROCK MATTRESSES

TerraLink™ Gabions

DOUBLE TWIST WIRE MESH BOXES

TerraLink™ Gabions are a tried and proven method of both retaining soil and providing erosion and scour protection.

Gabions have been popular for many years due to their flexibility and proven performance. Traditionally when gabion baskets were rock filled they could be designed to act as a monolithic mass for retaining wall construction that was quite flexible, free draining and well suited to remote construction areas. In addition to this application Cirtex can advise on the option of using TerraLink gabions as a facing on a reinforced soil structure, which can be more economical than a gravity retaining wall in some applications.

TerraLink gabions are supplied with a Bezinal 2000 90% Zinc + 10% Aluminium coating, the new generation long life alloy coating offering double the protection than the commonly available 95% Zinc + 5% AL coating systems and an extra coating of PVC to provide protection to the galvanising and an additional corrosion barrier

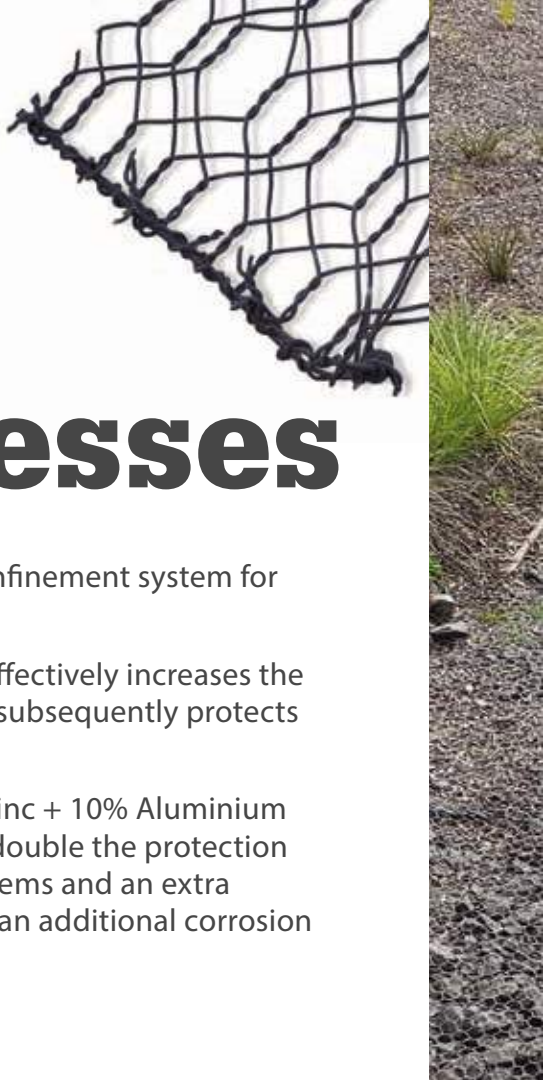
Available in a wide range of sizes to meet the requirements of your project. Supplied flat packed to be filled onsite making them more economical to freight.

FEATURES >

- **Premium Quality** product
- **Structural support** and erosion and scour applications
- Robust **solution for hard faced walls**
- Ideal for **highway underslip repairs**

TERRALINK GABIONS

Code	Grade	Size
76544	Bezinal/PVC	1m x 1m x 1m
76543	Bezinal/PVC	1.5m x 1m x 1m
76546	Bezinal/PVC	2m x 1m x 0.5m
13780	Bezinal/PVC	2m x 1m x 1m



TerraLink™ Rock Mattresses

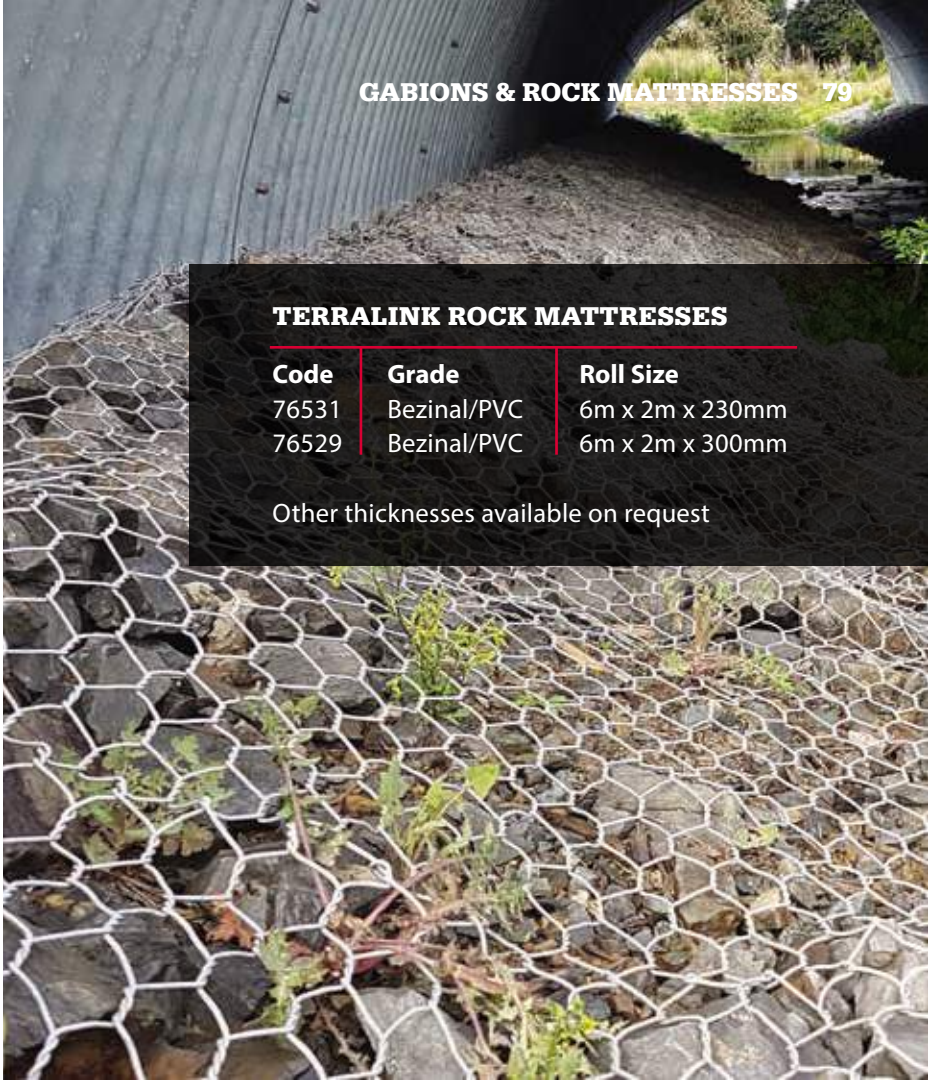
TerraLink™ Rock Mattresses are a double twist mesh rock confinement system for high energy erosion and scour protection applications.

The confinement of the rock within the double twist mesh effectively increases the resistance of rock movement for a given flow condition and subsequently protects the underlying soil from scour

TerraLink Mattresses are supplied with a Bezinal 2000 90% Zinc + 10% Aluminium coating, the new generation long life alloy coating offering double the protection than the commonly available 95% Zinc + 5% AL coating systems and an extra coating of PVC to provide protection to the galvanising and an additional corrosion barrier

FEATURES >

- **A long term solution** for aggressive scour applications
- **Flexible system** can withstand ground movement
- **Uses locally** available **infill material**
- Can be **anchored for greater stability**
- Inherent weight of product when installed **can assist with slope stability**



TERRALINK ROCK MATTRESSES

Code	Grade	Roll Size
76531	Bezinal/PVC	6m x 2m x 230mm
76529	Bezinal/PVC	6m x 2m x 300mm

Other thicknesses available on request

Rockfall Mesh

DOUBLE TWIST STEEL MESH

Cirtex® Rockfall Mesh is woven in a unique double twist weave providing a robust product and minimising the potential to unravel.

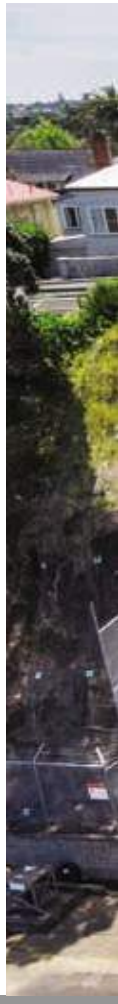
They are manufactured from galvanised and PVC coated wire for long term use in exposed environments.

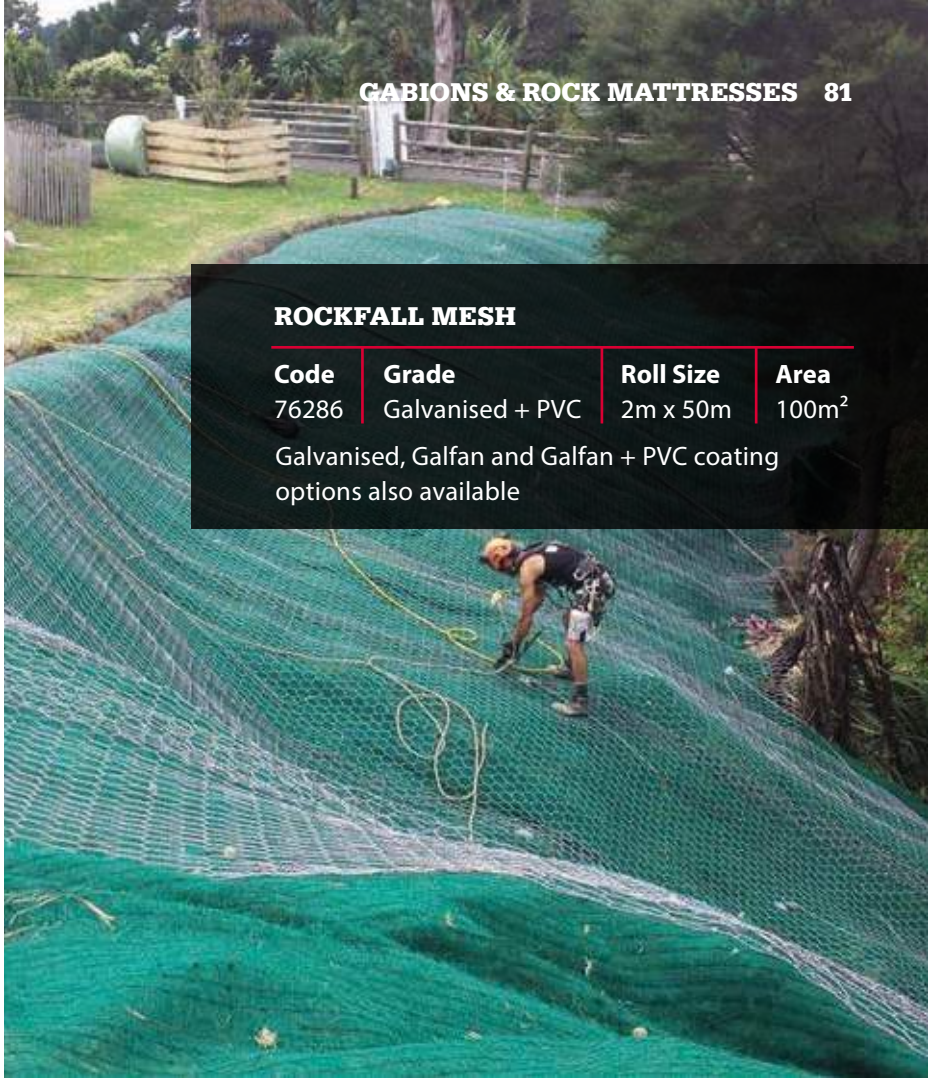
The mesh can be installed to prevent rockfall or to allow rocks to fall in a controlled manner and prevent them from causing any damage to infrastructure or the public. The mesh can be used to stop rocks, control their trajectory, reduce the energy, or in cases where slope geometry permits, used in a catchment in conjunction with an inclined deceleration zone.

Cirtex Rockfall Mesh can be used in conjunction with Platipus® Earth Anchors and many other soil nail solutions.

FEATURES >

- Double twist construction, **will not unravel** if wire breakage occurs
- **Can be anchored** with Platipus Anchors **for added stability**
- May be **used in conjunction with Cirtex TRM** for **added erosion protection** when required
- **Corrosion protection options available** to suit the environment





ROCKFALL MESH

Code	Grade	Roll Size	Area
76286	Galvanised + PVC	2m x 50m	100m^2

Galvanised, Galfan and Galfan + PVC coating options also available

GEOCELL

StrataWeb®

THREE-DIMENSIONAL GEOCELL

StrataWeb® geocell is a strong yet lightweight three-dimensional geocell used for erosion control applications and improving load bearing capacity of weak soils.

Load Support

StrataWeb is a proven solution for improving the strength of soft soils. This is achieved by spreading the load over a greater area. Furthermore, when it is not cost-effective to transport high quality fill material to the site, existing material such as sand or clay can be used to fill the StrataWeb structure. Applications can include building pavements in container yards, roads, walkways and foundations.

Erosion Control for Slopes

The honeycomb structure of StrataWeb provides a very effective solution for containing material such as topsoil on slopes up to 60 degrees. Used in conjunction with a Turf Reinforcement Matting (TRM) such as ECC3, the StrataWeb system provides a substantial barrier against the erosion of fill material and speeds up the vegetation process.

FEATURES ›

- **Multiple fill material options** including concrete, topsoil, sand or aggregate
- **Existing material onsite** can sometimes be **used to fill the panels**
- **Perforated cell walls** provide **horizontal drainage**
- **Collapsible panels** make the product **cost-effective to transport** to site
- **Large cell coverage** once expanded
- **Suitable for slopes** up to **60 degrees**
- Ideal for **constructing roads over soft material** or **sand**

STRATAWEB

Grade	Panel Size	Cell Depths
SW356	2.59m x 6.5m	75mm, 100mm, 150mm, 200mm, 250mm, 300mm
SW445	2.56m x 8.35m	75mm, 100mm, 150mm, 200mm, 250mm, 300mm
SW660	2.44m x 12.63m	75mm, 100mm, 150mm, 200mm, 250mm, 300mm

TURF REINFORCEMENT MATTING

BioCoir

COCONUT MATTING

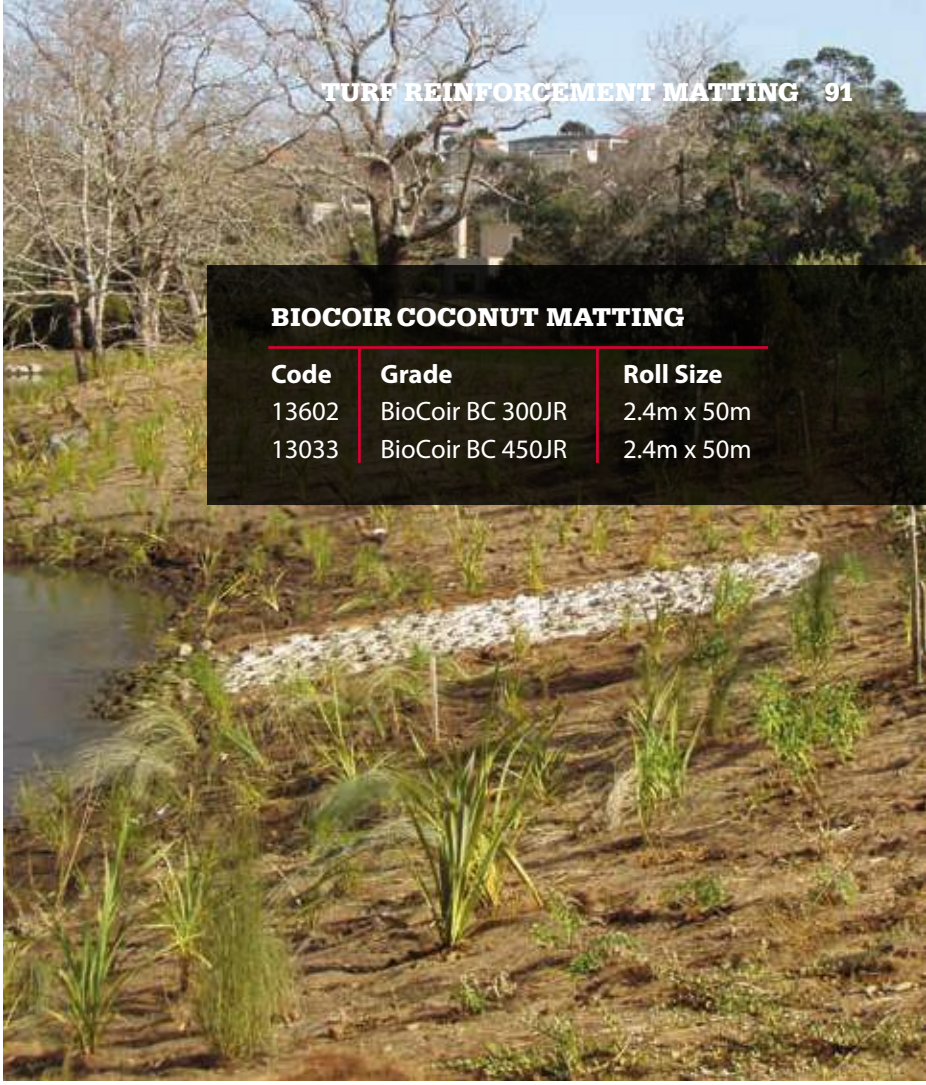
BioCoir is a biodegradable coconut fibre matting for erosion and sediment control and landscaping applications. BioCoir is ideal for protecting cut faces and exposed soil from erosion due to wind and water.

In addition to the erosion control function, Cirtex® BioCoir allows moisture penetration to assist vegetation establishment while insulating the seed and root zones from extremes of temperature.

BioCoir BC300JR and BC450JR have a jute net to reinforce the product, making it 100% natural fibre.

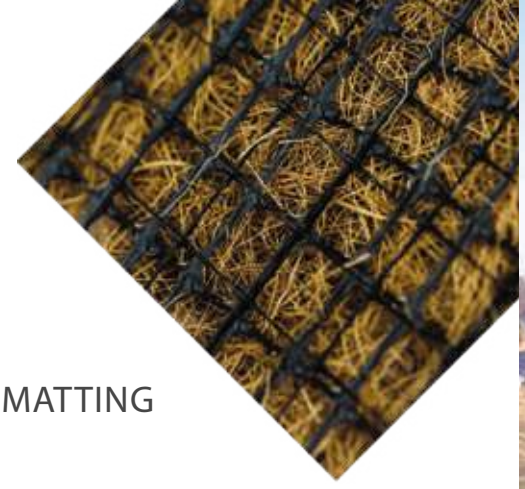
FEATURES >

- **Biodegradable**
- **Promotes growth** of vegetation
- Positive **natural advantages** over synthetic products
- **Protects exposed soil** from wind and water
- **Retains moisture**
- Made from sustainable **natural coconut fibres**



BIOCOIR COCONUT MATTING

Code	Grade	Roll Size
13602	BioCoir BC 300JR	2.4m x 50m
13033	BioCoir BC 450JR	2.4m x 50m



ECC3

HIGH PERFORMANCE TURF REINFORCEMENT MATTING

ECC3 is a permanent turf reinforcement matting that allows vegetation to be established and maintained in high stress environment.

ECC3 consists of three layers of UV stabilised netting for long term reinforcement with an infill of natural coconut fibre to assist with vegetation establishment. ECC3 is ideal for providing a naturally vegetated finish for steep slopes (1:1) that are prone to erosion and scour.

ECC3 allows for grass applications in stormwater overflow paths and swale drains providing an easy to maintain solution. The use of reinforced grass in swale drain applications also helps to minimise the transmission of waterborne sediments into our waterways and provides a soft green solution. Once vegetated, ECC3 can handle flow velocities up to 7.62 m/s which make it an attractive alternative to traditional hard armour scour protection methods such as concrete and gabions.

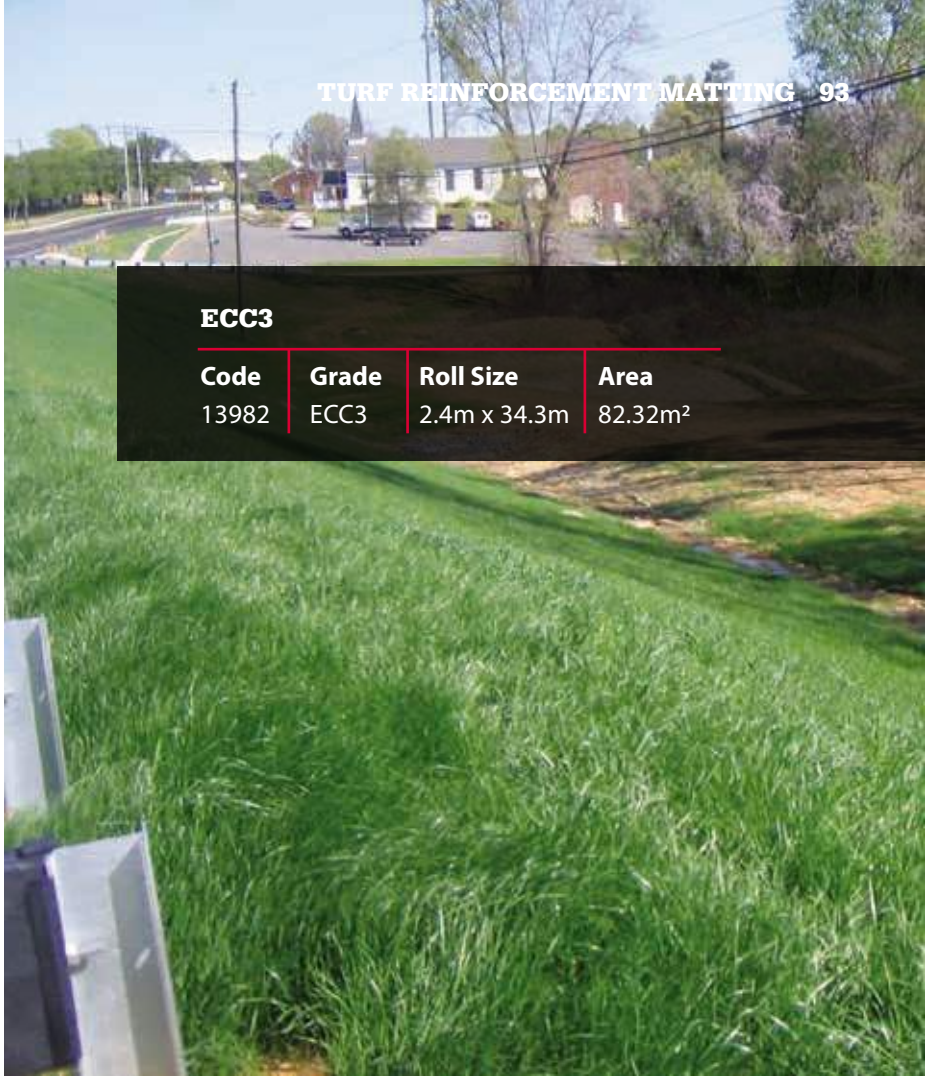
Manufactured from a matrix of UV stabilised Polypropylene reinforcement meshes and incorporating a natural coconut fibre fill to assist with vegetation establishment, ECC3 is considered to be a permanent TRM with enhanced short and long term performance. The natural colour of ECC3 allows it to blend in with the surrounding environment until the vegetation is established.

FEATURES >

- Allows an **aesthetically pleasing vegetated finish**
- **Excellent flow velocity** performance
- **Assists** with **vegetation growth**
- **Alternative scour protection** to concrete and gabion type structures
- **Easy to install** and requires no specialist equipment

ECC3 PERFORMANCE

Strength	11.70kN/m / 9.38kN/m
Vegetated Velocity	7.62m/sec



ECC3

Code	Grade	Roll Size	Area
13982	ECC3	2.4m x 34.3m	82.32m²

T-RECS

HIGH PERFORMANCE TURF REINFORCEMENT MATTING (HPTRM)

T-RECS HPTRM is a permanent, three-dimensional, woven polypropylene mat designed to provide erosion protection on steep slopes and high velocity channels.

The process of manufacturing T-RECS involves cross-directional monofilament fibres woven into multiple dimensions featuring the T-RECS technology with dome characteristics.

This unique process and feature enhances the performance of the product and gives additional support to the vegetation. T-RECS provides reinforcing capabilities and interlocking root system while assisting the vegetation establishment. The product can be either surface applied or soiled filled to maximise performance.

The T-RECS meets Type 5.A, 5.B, and 5.C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.18.

T-RECS can be secured in place using the Cirtex® Ground Staples providing a secure connection to ensure that the grassroots establish into the matting. The Cirtex Platipus ARGS® anchors can also be used to secure the T-RECS in the more demanding applications where extra reinforcement is needed.

- **Suitable for** use in **high velocity applications**
- Can be **used to replace costly hard armour systems** such as concrete, rock or gabion mattresses
- **Unique dome shape** giving greater surface coverage and improved adherence to soft subgrade
- Interweaving dome shape **allows maximum seed, soil and water to be trapped, promoting faster vegetation** and a stronger root system
- **Used in conjunction with Platipus® Earth Anchors** on steep slopes or high velocity channels or bunds

T-RECS PERFORMANCE

Strength	44kN/m
Vegetated Velocity	7.6m/sec

T-RECS

Code	Colour	Roll Size	Area
13967	Tan	3.66m x 22.86m	83.66m^2
13074	Green	3.66m x 22.86m	83.66m^2

DuraMat RF

HEAVY DUTY TURF REINFORCEMENT MATTING (TRM)

DuraMat RF is a three-dimensional composite TRM, reinforced with a PVC coated double twist steel mesh giving a high strength product with low elongation.

The combination of these products gives a robust and versatile product used for rock control, slope stability and turf reinforcement applications.

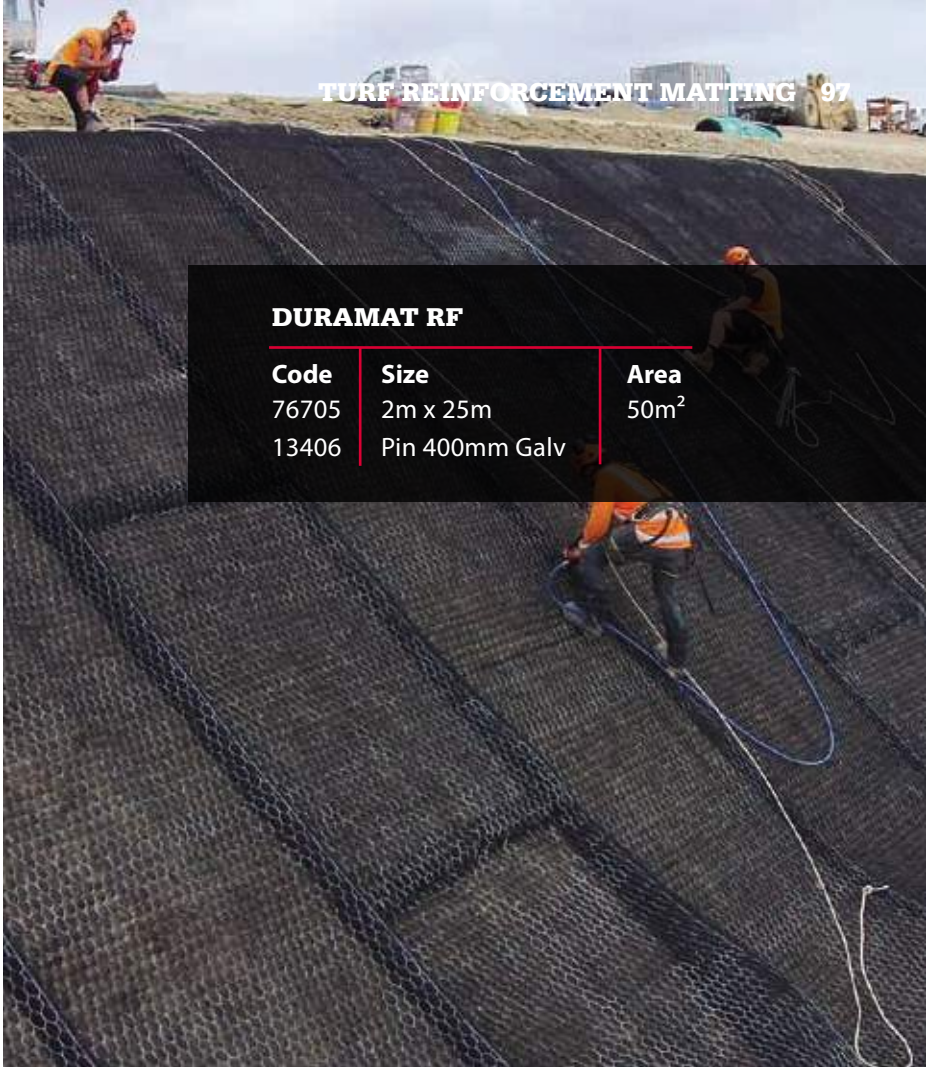
The double twist wire mesh provides high strength and low elongation allowing the DuraMat RF to be anchored securely on to the bank using robust pins, soil nails or anchors. This adds a structural function along with erosion and scour protection.

This three-dimensional TRM offers protection from scouring and helps assist with vegetation growth.

See also Cirtex® Rockfall Mesh (Page 80) and advanced erosion protection matting systems for further slope stability and scour protection options.

FEATURES >

- **Long life galvanised** and **PVC coated** structural element
- Convenient **2m x 25m rolls**
- **Rockfall**, **scour** and **slope stability** applications
- **Saves time** as opposed to laying product separately
- **Used** in conjunction **with Platipus® Anchor Systems**



DURAMAT RF

Code	Size	Area
76705	2m x 25m	50m^2
13406	Pin 400mm Galv	

Fortrac 3D

HEAVY TENSILE REINFORCEMENT GEOGRID

Given the global increase in heavy rain events, the construction of slopes with guaranteed long term stability poses a major challenge, particularly when built with steep inclinations.

Fortrac 3D range offers a stabilisation solution that resists the downward forces of soil mass and achieves a strong bond with soil particles and plant roots.

Fortrac 3D, a refinement of the familiar Fortrac geogrid, is a flexible, three-dimensional reinforcement grid made from high-tensile, low-creep multifilament synthetic yarns with integral soil erosion prevention. Two crucial functions are therefore combined in a single product: anti-slip reinforcement and erosion control.

The Fortrac 3D TRM allows the safe construction of steep slopes and their subsequent planting for applications such as embankments, dikes, landfills, landscape structures, reservoirs etc.

A **Anti-slip reinforcement**

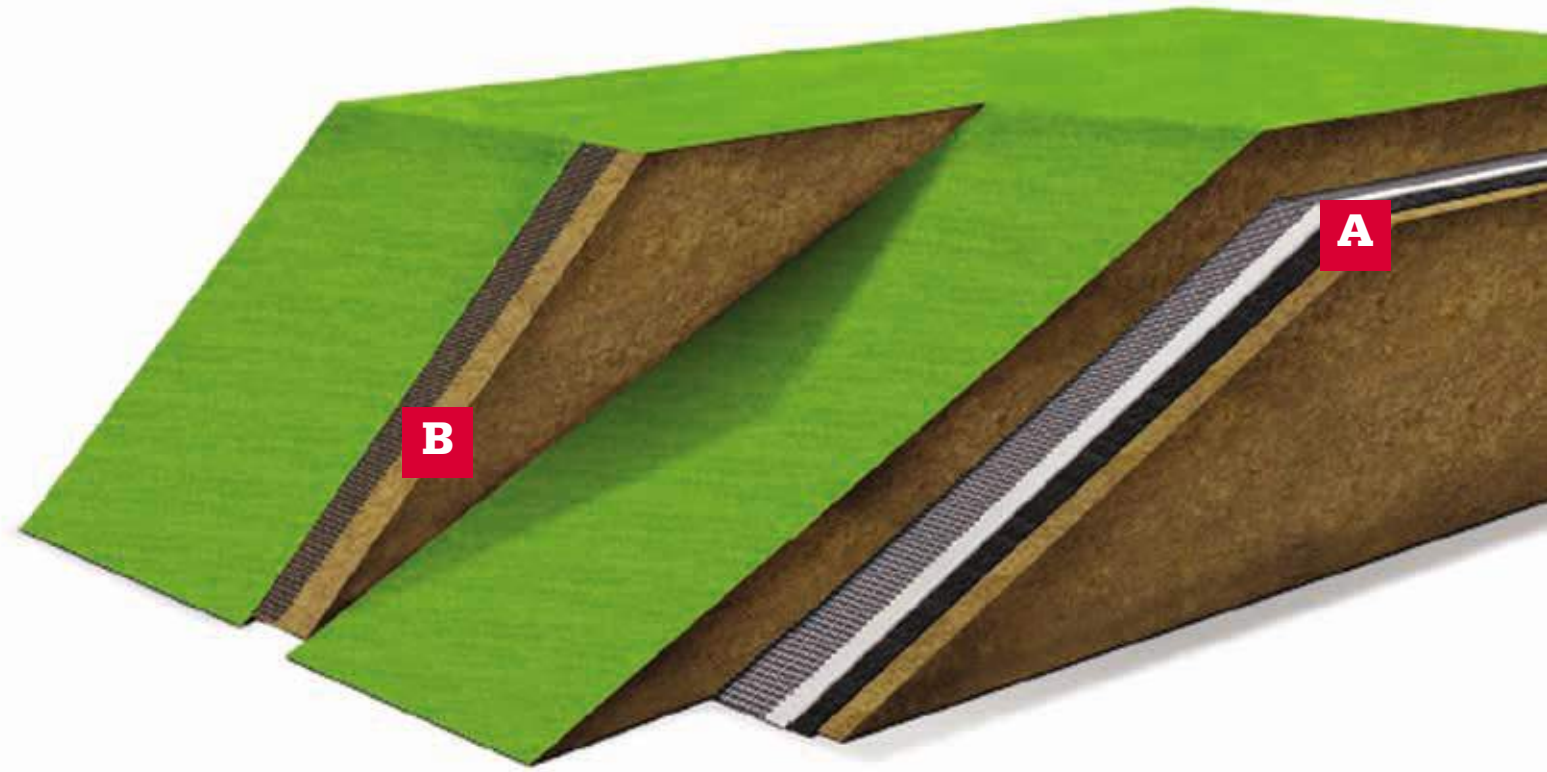
- High-tensile, high-modulus, low-creep geogrid
- Optimum interaction between geosynthetic product and soil
- High resistance, even in alkaline environments
- Wide range of tensile strengths

B **Soil retention /erosion control function**

- Three-dimensionally orientated transverse strands for efficient soil retention and prevention of surface erosion
- Root-penetrable aperture sizes for high vegetation stability
- Integral structural continuity between three-dimensional transverse strands and reinforcement grid

FORTRAC 3D

Code	Grade	Size
13839	3D - 20	4.5m x 100m Roll
13852	3D - 30	4.5m x 100m Roll
13838	3D - 60	4.5m x 100m Roll
13853	3D - 90	4.5m x 100m Roll
13854	3D - 120	4.5m x 100m Roll



FEATURES

- **Flexible geogrid** with **3D mesh structure**
- **High stability** for **critical slip surfaces** even under heavy-rain events
- Durable vegetation for **long term stability**
- Provides friction between layers to **hold soil on steep slopes**
- **Reliable protection** against external actions
- Fast and **straight forward installation**
- **Long lasting** rehabilitation
- Wide ranging applications and **customised configurations**

EARTH ANCHOR & PILE SYSTEMS

Platipus® Civil Anchors

PERCUSSION DRIVEN EARTH ANCHORS

Platipus® Earth Anchoring System is a percussion driven anchor system that can be installed into displaceable soils using a wide range of equipment depending on the application and ground conditions.

It creates a minimal disturbance of the soil during installation, can be tested to an exact holding capacity and made fully operational immediately. It is a completely dry system therefore having minimal environmental impact removing the need of drilling or grout.

STRESS DISTRIBUTION AND BEARING CAPACITY

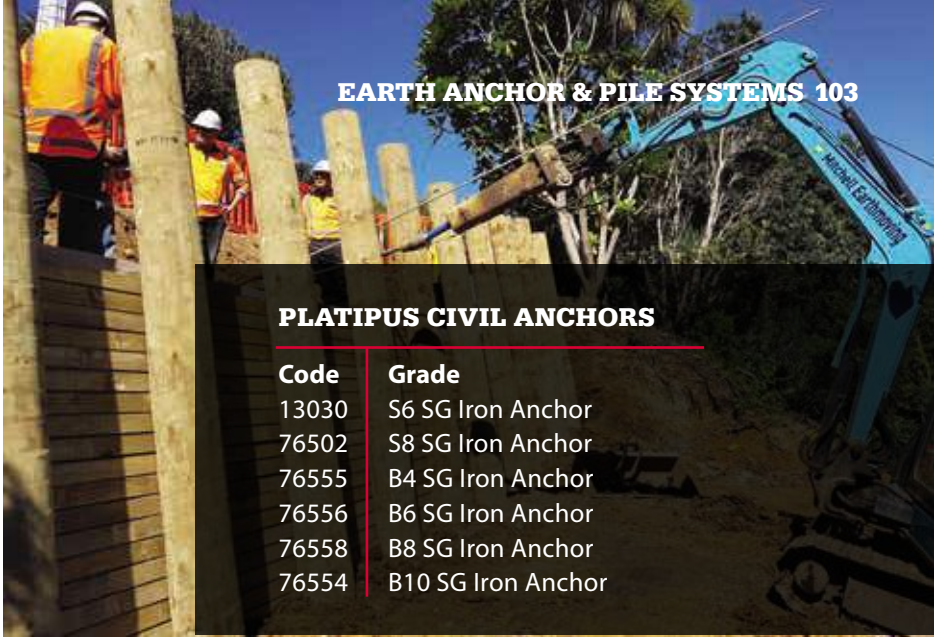
The stress distribution in front of a loaded anchor can be modelled using the Foundation Theory. The ultimate performance of an anchor within the soil is defined by the load at which the stress concentration immediately in front of the anchor exceeds the bearing capacity of the soil.

Platipus Anchors perform exceptionally well in a granular/noncohesive soil, displaying short load lock and extension characteristics, a broad frustum of soil immediately in front of the anchor and extremely high loads.

Stiff cohesive soils, such as boulder clays, can also give outstanding results. However, weaker cohesive soils, like soft alluvial clays, can result in long load lock and extension distances and a small frustum of soil in front of the anchor. Consequently, these conditions require a larger size of the anchor and if possible a deeper driven depth to achieve design loads.

FACTORS THAT WILL AFFECT THE ULTIMATE PERFORMANCE OF THE ANCHOR INCLUDE:

- The shear angle of the soil
- Size of the anchor
- Depth of installation
- Pore water pressure



PLATIPUS CIVIL ANCHORS

Code	Grade
13030	S6 SG Iron Anchor
76502	S8 SG Iron Anchor
76555	B4 SG Iron Anchor
76556	B6 SG Iron Anchor
76558	B8 SG Iron Anchor
76554	B10 SG Iron Anchor

APPLICATIONS

- **Portable buildings** / structures
- **Buoyancy control** / pipelines
- **Retaining walls**
- **Slope stabilisation**
- **Bridges**
- **Sheet piling**
- **Erosion control**
- **Gabion support**
- **Rock retention**
- **Scaffolding**
- **Foundations**
- **Marine applications**
- **Temporary works**

Platipus® ARGS® Anchors

Stabilising slopes offer significant challenges. The lack of deep-rooted vegetation, excess water, poor drainage, and over steepening often makes them susceptible to erosion or instability. Platipus® Anchors has proven that the combination of Percussion Driven Earth Anchors (PDEAS®) and a high strength facing material to support the load generated by the PDEA will stablise and prevent erosion in these applications.

The Platipus ARGS® range consists of three main anchor types:

PLATIPUS S2 ANCHOR

The Platipus S2 ARGS PDEA assembly comes in a variety of configurations with up to 1m of 3mm stainless steel wire tendon, two sizes of HDPE load plate and either a copper ferrule or wedge grip option. The anchor system should be driven through the surface covering material to a minimum depth of 450mm. Common facings used with Platipus S2 Anchors include: Turf Reinforcement Matting, Turf Pavers, Geotextiles and HDPE coverings.

PLATIPUS S4 & S6 ANCHORS

The Platipus S4 ARGS PDEA is the perfect solution for granular/non-cohesive soil. The larger S6 ARGS should be used in cohesive conditions. Both assemblies include a length of 4mm stainless steel wire tendon, a choice of load plates and a stainless steel conical wedge grip. They should be driven to a minimum depth of 750mm beyond the failure plane and have an ultimate holding capacity of 1000kg. Anchor depth, spacing and loads should be determined by a qualified Geotechnical Engineer. Common facings used with Platipus S4 & S6 Anchors include: High Performance Turf Reinforcement Matting (HPTRM), high strength geotextiles and geogrid and Rockfall Mesh.

PLATIPUS ARGS ANCHORS

Code	Grade
76314	S2 Anchor GEO 1m Kit
76313	S2 ARGS 1m Kit
76369	S4 ARGS 1.5m Kit
76371	S6 ARGS 1.5m Kit
76372	S6 ARGS 3m Kit

Platipus Buoyancy & Marine Anchors

The Platipus Percussion Driven Earth Anchors (PDEAS) offer a lightweight corrosion resistant anchor that can be driven from ground level using conventional portable equipment.

Anchor installation creates minimal disturbance in the soil during installation, can be stressed to an exact holding capacity and made fully operational immediately as there is no drilling or grouting required as this system has minimal impact on the environment.

The Platipus Buoyancy Control Anchoring System has many attachments and tensioning devices to connect to the pipe or tank being anchored. This is a quick and cost-effective way to prevent structures floating when installing in areas with high groundwater.

APPLICATIONS >

- **Buoyancy control / pipelines**
- **Marine applications**
- **Temporary works**

KITS CONFIGURED TO SUIT REQUIREMENTS OF EACH PROJECT.

Plati-Drain®

HORIZONTAL DRAINAGE SYSTEM

Water saturation due to heavy rainfall and insufficient drainage, leads to the softening of clay soils within slopes and increases hydraulic forces behind earth retaining structures.

Being a unique solution Plati-Drain® reduces pore water pressure within clay slopes and behind retaining walls. Unlike conventional weep holes, Plati-Drain provides deep penetration which can be in excess of 10m. It can also help prevent shallow or deep-seated slope failures.

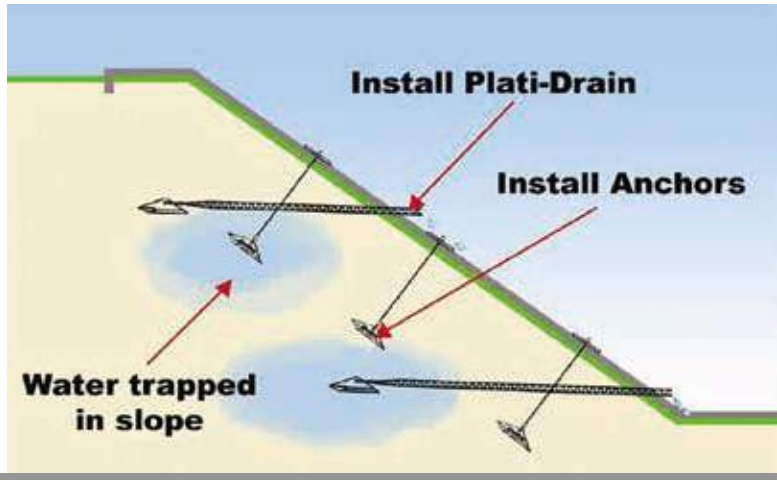
Plati-Drain is available as a passive or active solution.

The passive system uses a sacrificial anchor head to drive the Plati-Drain into its optimum position providing an immediate channel for water to drain.

The active system has an additional wire tendon attached to the anchor which allows it to be load locked, providing simultaneous draining and restraining capability.

FEATURES >

- **Fast** and **efficient to install**
- **No drilling mess**
- Can be **used as an active anchor**
- **Cost-effective**
- **Can be installed with small hand equipment** for restricted sites
- **Plati-Drain is custom made** for site-specific requirements.



Shear Lock®

ENGINEERED SLOPE RETENTION SYSTEM

Shear Lock® is an engineered slope retention pile system. Shear Lock is an innovative and cost-effective way to prevent or repair shallow landslides.

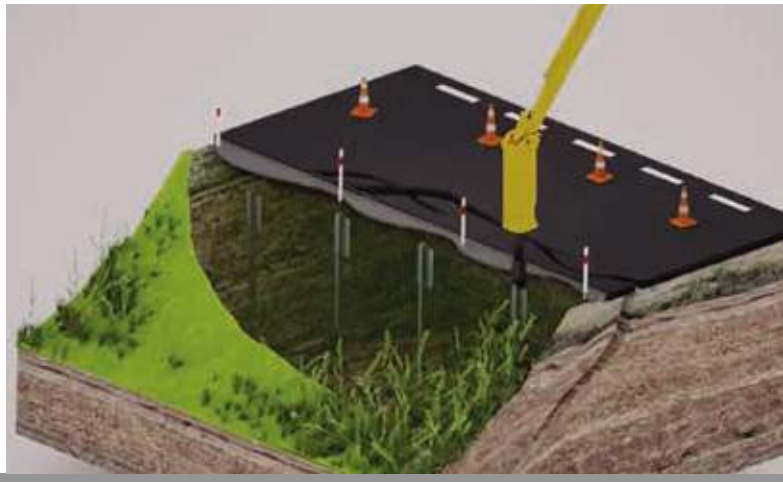
Shear Lock uses tried, and true engineering principles combined with Shear Lock Piles to quickly and efficiently retain unstable material and 'lock' the potential shear failure plane. (Shear Lock Piles are a Registered Design of Cirtex®)

Many areas in New Zealand, especially around road and rail infrastructure, are characterised by steep and unstable slopes, causing landslides to block the road or rail network during frequent storm events. With the Shear Lock system, the slipped soil can be pushed back on to the slope and compacted into place, then stabilised by installing Shear Lock Piles in a predetermined grid pattern.

The Shear Lock system is also commonly used when tension cracking or slumping is detected to reinforce the slope and prevent further damage.

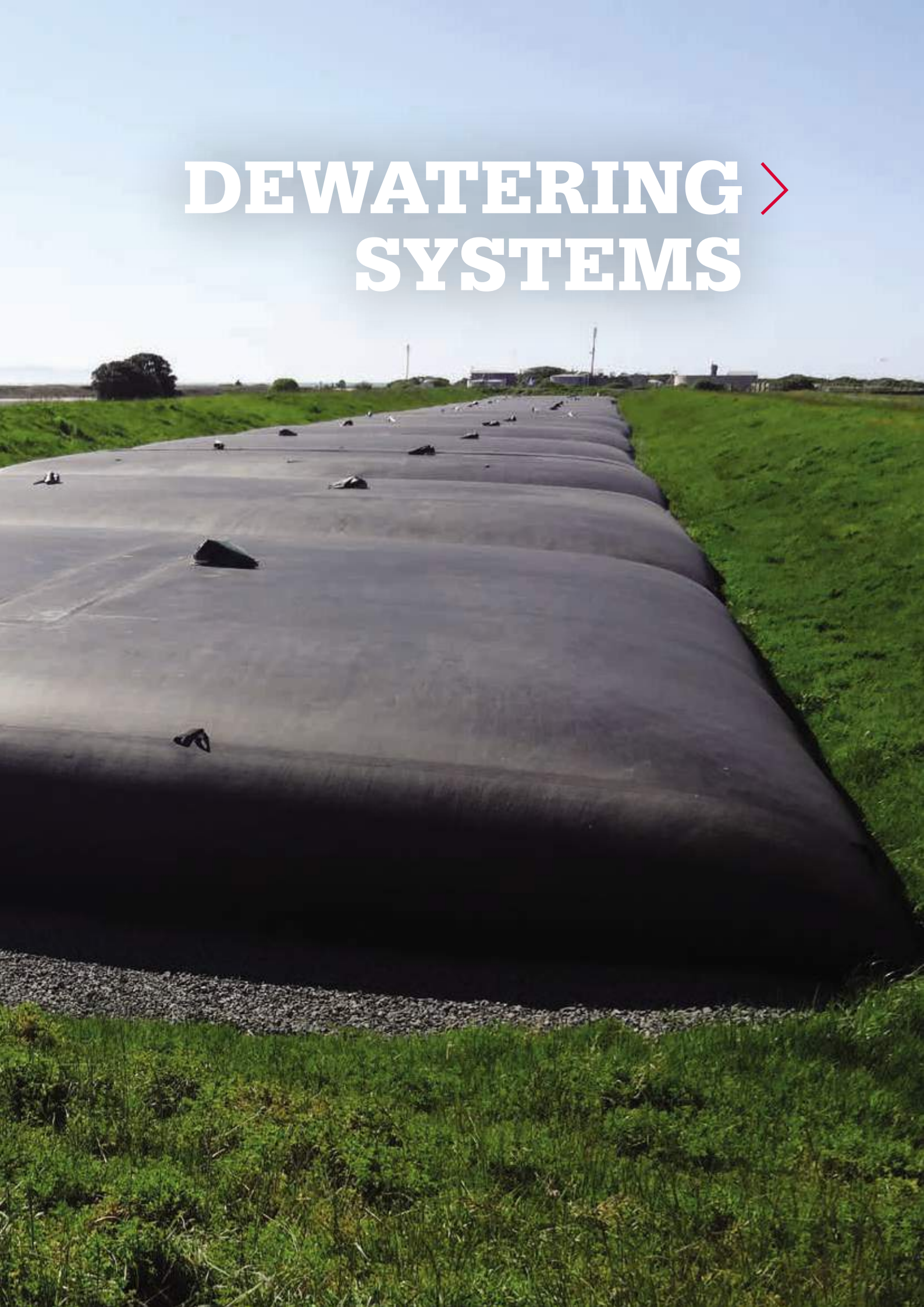
FEATURES ›

- **Prevents costly and time consuming cartage** of slip material away from the site
- **Fast design and execution** due to extensive research of typical designs
- Can be **engineered to meet specific site conditions**
- Uses readily available and **pre-certified Shear Lock piles** which are used as the basis for the **Shear Lock design charts**
- **Backed up by extensive engineering** research and computer modelling
- Can be **used for repairing existing failures** or **stabilising** known **potential slides**



SHEARLOCK	Code	Product
Made to order	76291	Shear Lock Piles type 2

DEWATERING SYSTEMS



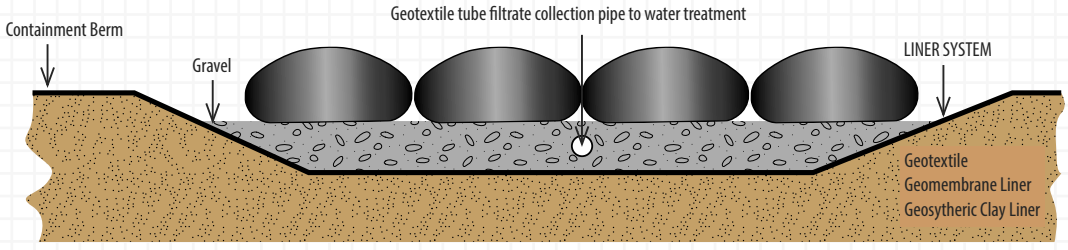
EnviroSieve Dewatering Tubes

EnviroSieve Dewatering Tubes are manufactured from a woven geotextile, and are used in a wide range of dewatering applications.

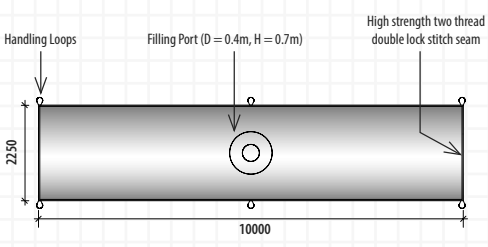
Used to dewater sediment laden water, EnviroSieve Dewatering Tubes retain the soil particles allowing the clean water to filter through the tubes. The filtered water is often returned into the source pond or released depending on the consent conditions.

Cirtex® fabricate the EnviroSieve Dewatering Tubes here in New Zealand allowing a great deal of flexibility around the sizing, inlet port, tie hook type and spacing while maintaining very fast delivery of a solution that meets your exact requirements.

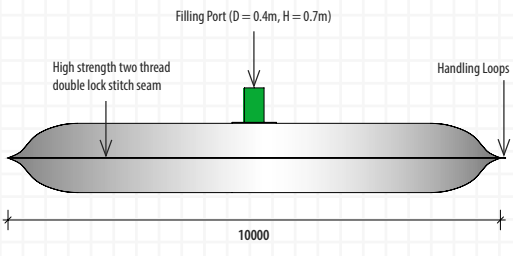
EnviroSieve Dewatering Tubes are available in a high flow and standard flow geotextile option. The high flow option is manufactured from a special mono/multifilament woven geotextile designed to provide high flow through the fabric while still filtering the fine particles. This allows more water to be pumped through the tubes in a shorter period and a higher solids content to be achieved in the tubes. The EnviroSieve standard flow tubes provide a cost-effective and yet productive option when the speed of dewatering in not so critical.



TOP ELEVATION OF ENVIROSIEVE 20m³



SIDE ELEVATION OF ENVIROSIEVE 20m³



ENVIROSIEVE DEWATERING BAGS

Code	Product	Filled Size (Approx)
76493	3.6m Cir x 1.8m	1.5m x 1.5m
76495	4.5m Cir x 2.2m	1.9m x 1.9m
76491	4.5m Cir x 5m	1.9m x 4.5m
76492	4.5m Cir x 10m	1.9m x 9.5m
76494	9m Cir x 5m	3.9m x 4.5m
76490	9m Cir x 10m	3.9m x 9.5m
76489	13.5m Cir x 10m	5.5m x 9m
76390	13.5m Cir x 20m	5.5m x 19m
76697	18m Cir x 20m	8m x 19m
76698	22m Cir x 20m	10m x 19m
76699	27m Cir x 30m	12m x 29m
76700	31m Cir x 30m	13.5m x 29m

Custom made sizes available

THE DEWATERING BAG WORKS EFFECTIVELY BY ›

CONTAINING the fine grained material that is dewatered within the unique weave of the EnviroSieve textile.

DEWATERING excess water through the specially constructed high flow pores of the EnviroSieve textile. There is a significant volume reduction of the material in this stage which allows for the repeated filling of the EnviroSieve product in many cases.

CONSOLIDATION of the fine grained material occurring after the final cycle of filling and dewatering. The fine grained soils contained within the EnviroSieve continue to consolidate through desiccation, with residual water vapour escaping through the unique pore structure. This results in the most effective state for final disposal of the waste.

EnviroSieve Dewatering Bags have proved to be an economical and effective option for dewatering both oxidation ponds and sediment ponds in a range of local conditions.


K Rosebank Rd
PICK A PA

DRAINAGE COMPOSITE

ArmourFlow™

GEOCOMPOSITE PANEL DRAIN

Armourflow™ is an advanced geocomposite drainage board used to protect waterproofing coatings and efficiently transport water into the drainage systems at the base of retaining walls to prevent hydrostatic pressure build up.

Comprising of a dimpled crush resistant HDPE core with a highly permeable geotextile filter bonded onto one side to provide a drainage sheet, Armourflow Panel Drain is commonly used behind basement and retaining walls to collect and filter water ingressing from backfill soils. Armourflow also protects the waterproofing liner from damage when the backfill soil is being placed.

Due to Armourflow's lightweight structure, it can often be used to replace conventional mineral drainage aggregate, saving time and money. It is also quick and easy to install and doesn't require heavy machinery.

FEATURES ›

- **Reduction** in **hydrostatic pressure**
- **Additional protection** to waterproofing membranes
- **Horizontal drainage for rooftops** and planter boxes
- **Resistant to** all commonly occurring ground chemicals
- **Reduces the need fo**r expensive drainage aggregate
- **Protects waterproof coatings** from soil and rock damage
- **Easily cut** and joined

ARMOURFLOW PANEL DRAIN

Code	Product	Roll Size	Area
76801	Armourflow 12	1.1m x 25m	27.5m²

DuraFlow T

DRAINAGE COMPOSITE

DuraFlow T drainage composite is a combination of a biplanar or triplanar geonet with a nonwoven geotextile attached to one or both sides.

Drainage composites have many applications and are commonly used to provide a drainage channel in landfills, pavements and retaining walls. The use of the DuraFlow T can remove the need for drainage material that is difficult to place and costly.

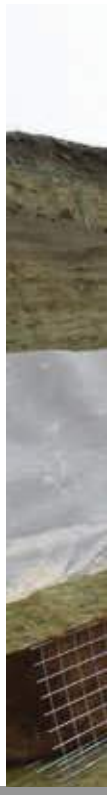
DuraFlow T is available in a biplanar and triplanar geonet in a range of thickness from 5mm – 10mm to meet the requirements of different projects. The product may be supplied as a net only or, when a positive filtration function is required, a geotextile may be attached to one or two faces of the net.

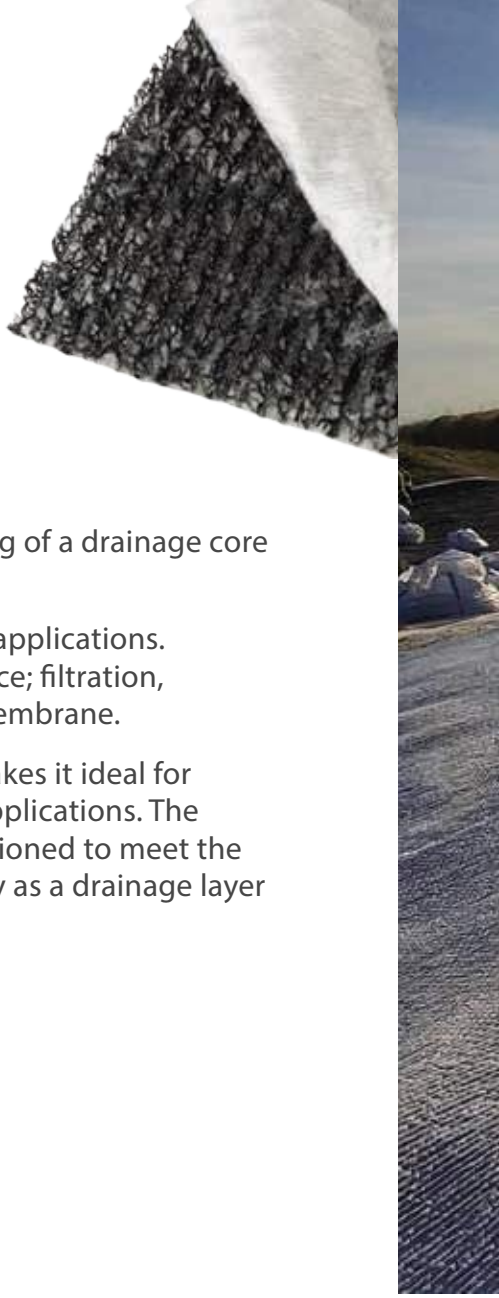
It has a high compressive strength able to withstand the compressive loads associated with deep landfill construction applications. The product has a unique rib structure which ensures efficient drainage through the product in a very uniform manner.

DuraFlow T is a specialty product made to order for high performance applications. For most geocomposite drainage applications refer to DuraFlow Q (Page 118).

FEATURES >

- **Wide width rolls** available
- **Economical alternative** to traditional granular methods
- Lightweight and **easy to install**
- **High compressive strength**
- **Excellent drainage** distribution
- Cost-effective **alternative to drainage aggregate**





DuraFlow Q

DRAINAGE COMPOSITE

DuraFlow Q is a three dimensional composite product consisting of a drainage core and nonwoven geotextile for drainage application.

DuraFlow Q is used extensively to drain water or gas in various applications. In landfill engineering, DuraFlow Q serves three functions at once; filtration, protection and drainage, when installed directly above a geomembrane.

The ability of DuraFlow Q to passively relieve water pressure makes it ideal for drainage over buried structures and for road edge strip drain applications. The filter geotextile and the drainage core can be efficiently dimensioned to meet the required drainage capacity. DuraFlow Q is also used successfully as a drainage layer in the construction of buildings, tunnels and roofs.

FEATURES ›

- **Filtration, protection and drainage** in one product
- Excellent **in-plane flow** properties
- **Long term** hydraulic **performance**
- **Replaces** natural **drainage aggregate**
- **Resistance to** chemical and **biological degradation**
- Ideally **suited for steep slope application** due to excellent shear properties
- **Robust** against on site conditions
- Quick and **cost-effective installation**
- Manufactured by **ISO quality** accredited company

TerraDrain

PRE-FABRICATED VERTICAL DRAINS (PVD)

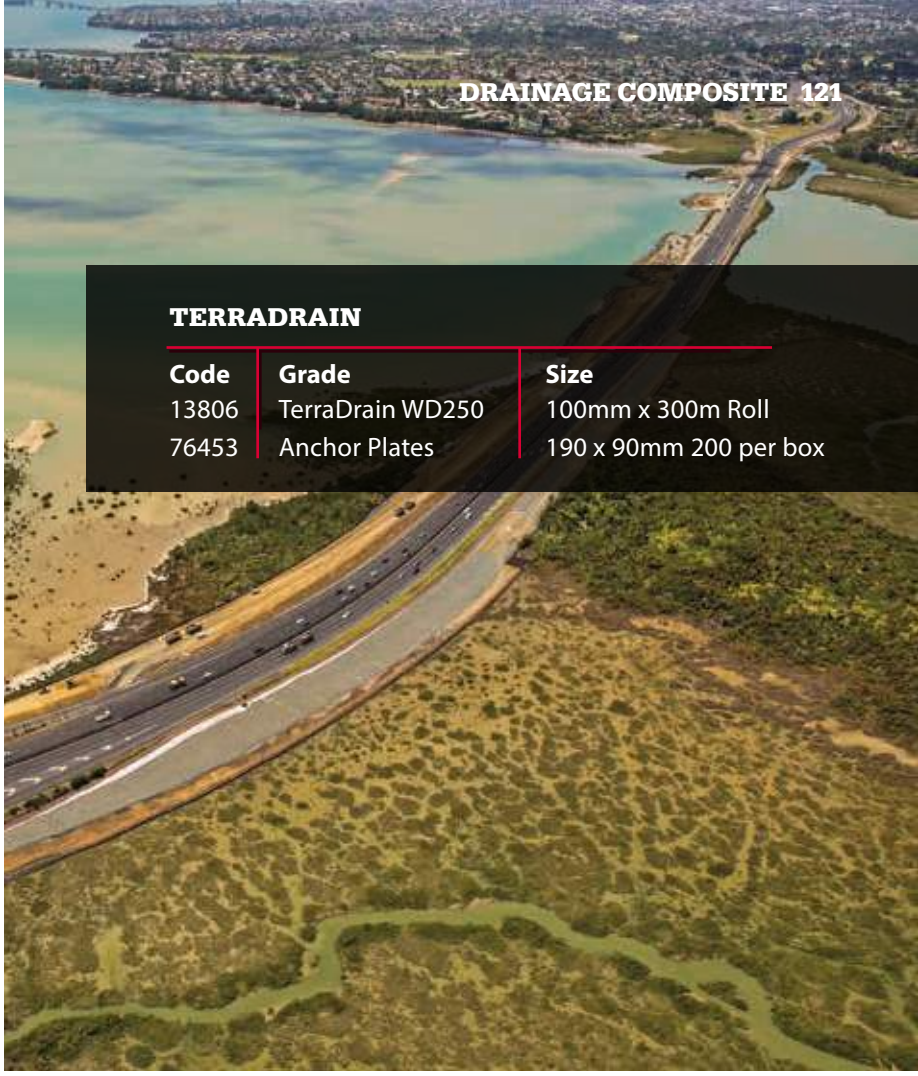
TerraDrain can be of significant assistance in increasing the speed of consolidation of very soft soils. This ultimately improves the shear strength of the soil so that an engineering structure may be constructed quickly.

TerraDrain is a specially designed polypropylene core extruded into a unique configuration to transmit maximum water flow on both sides of the core.

The core is fully wrapped in a nonwoven geotextile filter that is ultrasonically welded to maintain effective filtration. The main design advantage of this core structure is the resistance to pinching off flow when distorted under the effects of ground consolidation.

FEATURES >

- **Fully wrapped core** preventing delamination onsite
- Can be **spliced onsite**
- **Maintains high flow rates** when kinked
- **Reduces settlement time**
- Long **300m continuous rolls**
- Comes **packaged in UV protected packaging** 23 rolls/pallet
- **Robust anchor plates**



TERRADRAIN

Code	Grade	Size
13806	TerraDrain WD250	100mm x 300m Roll
76453	Anchor Plates	190 x 90mm 200 per box

Armourflow™ FS6

GAS AND WATER DRAINAGE SYSTEM

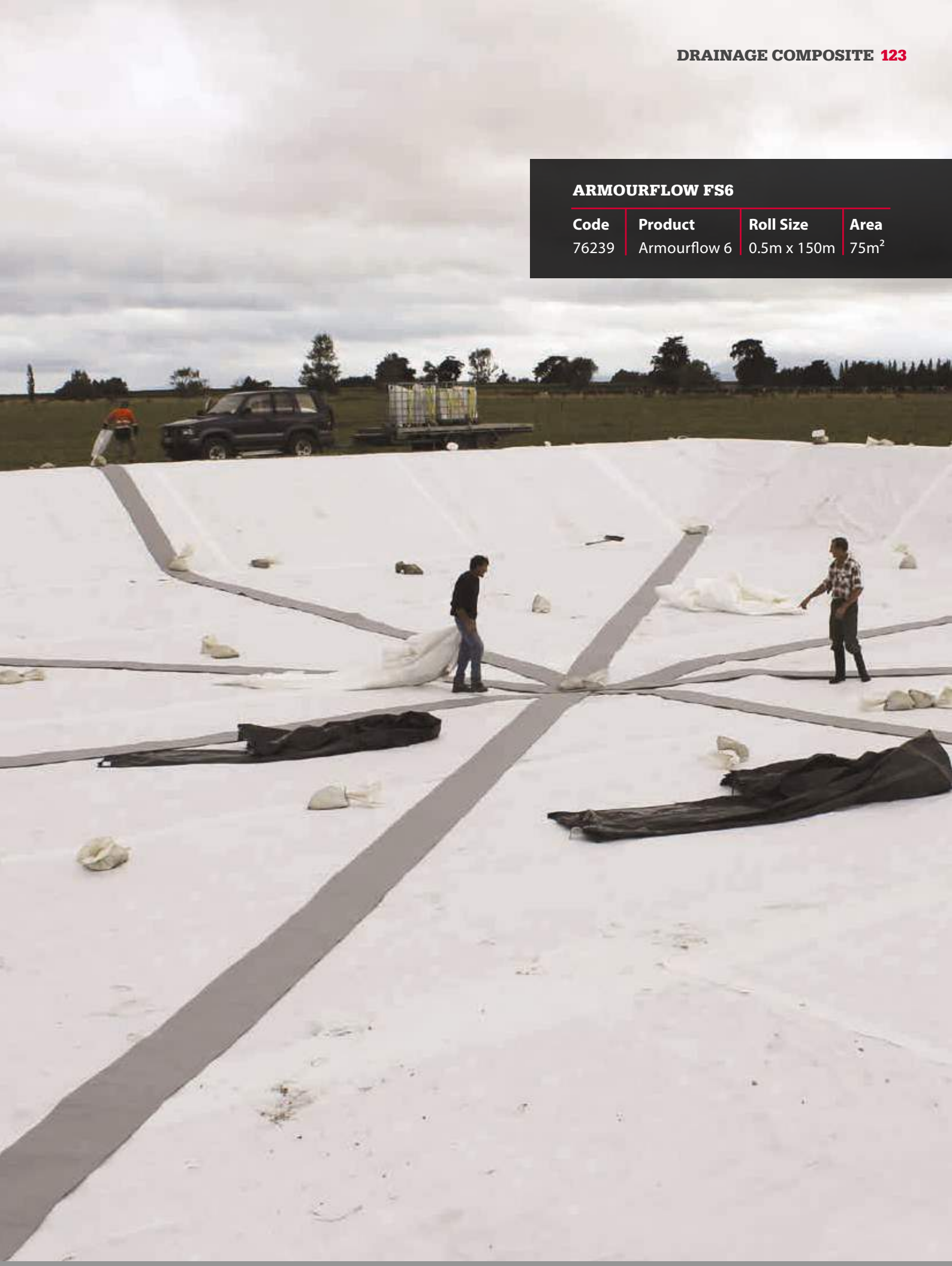
Armourflow™ FS6 is a low profile drainage composite commonly used to provide gas and water drainage under impermeable liners.

With a core of double cuspated HDPE surrounded by a nonwoven geotextile, Armourflow FS6 is ideally suited to venting systems under a pond liner. Collecting and dissipating pressure from either gas build up or hydrostatic pressure, Armourflow FS6 ensures the longevity and integrity of the pond or landfill liner.

Armourflow FS6, supplied in 150m rolls, is lightweight and easy to install, having high crush resistance and the flow rates required for these applications.

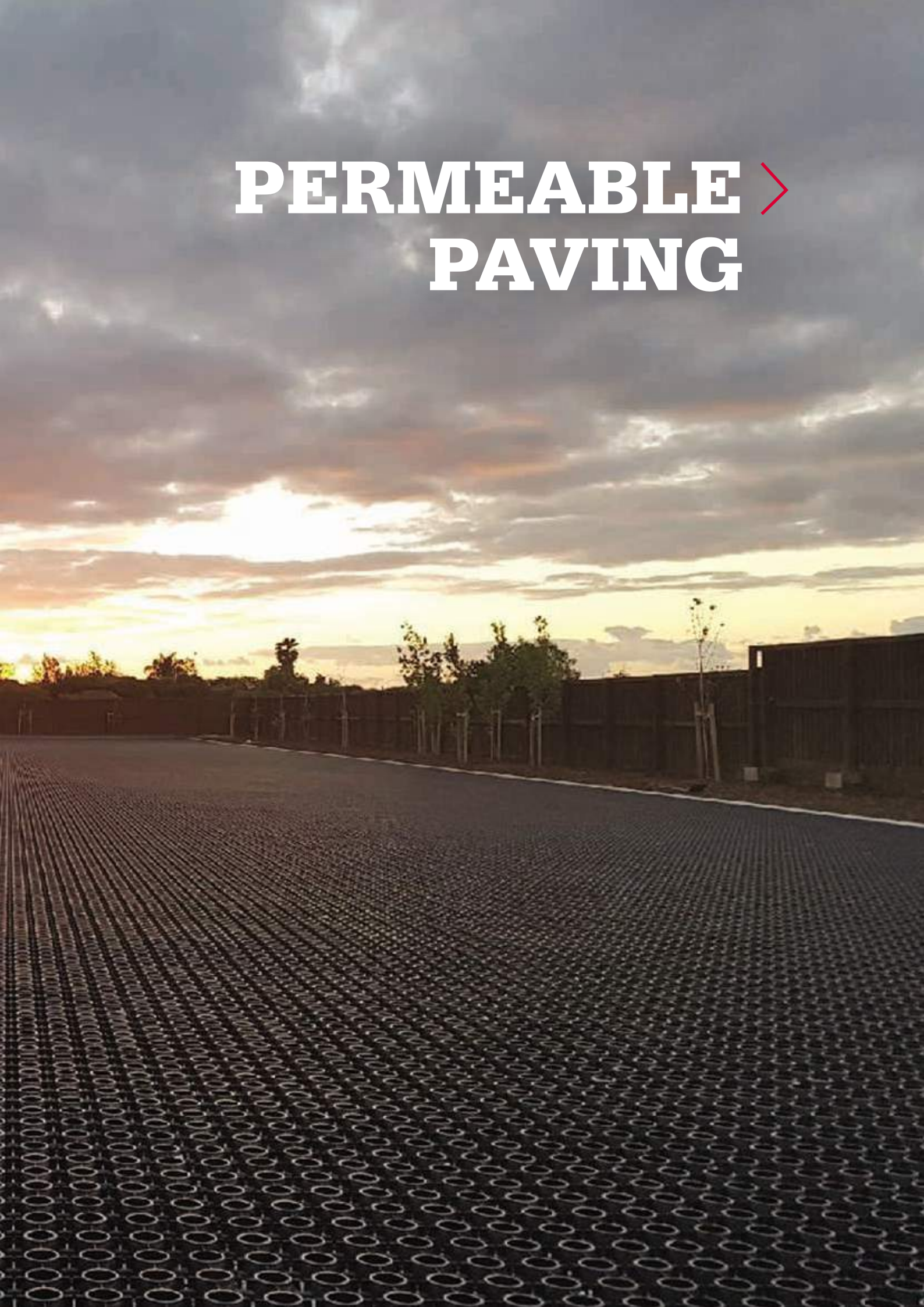
FEATURES >

- **Lightweight** and **easy to install**
- **High flow rate**
- **100% polymer product**, resistant to bacteria
- High **resistance to crushing**
- **Effective at preventing the building up of gas** under impermeable liners in ponds and landfill applications
- **150m long rolls**



ARMOURFLOW FS6

Code	Product	Roll Size	Area
76239	Armourflow 6	0.5m x 150m	75m^2



PERMEABLE PAVING

SurePave™

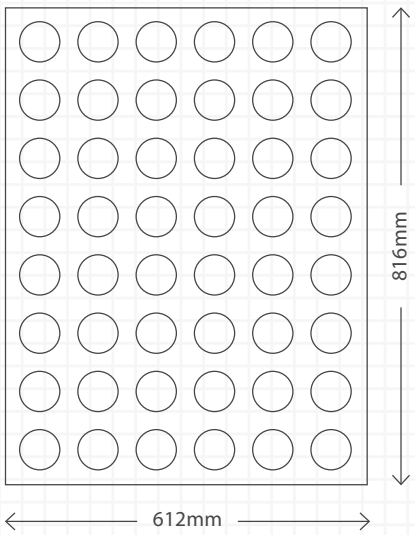
GRASS AND GRAVEL REINFORCEMENT

The SurePave™ interlocking grid structure is designed to secure and reinforce grass, decorative stones and gravel, giving these areas the ability to withstand use from foot traffic to heavy vehicles.

SurePave panels are locked together underneath the aggregate surface, evenly distributing any weight placed on top. This minimises compaction and eliminates potholes and ponding.

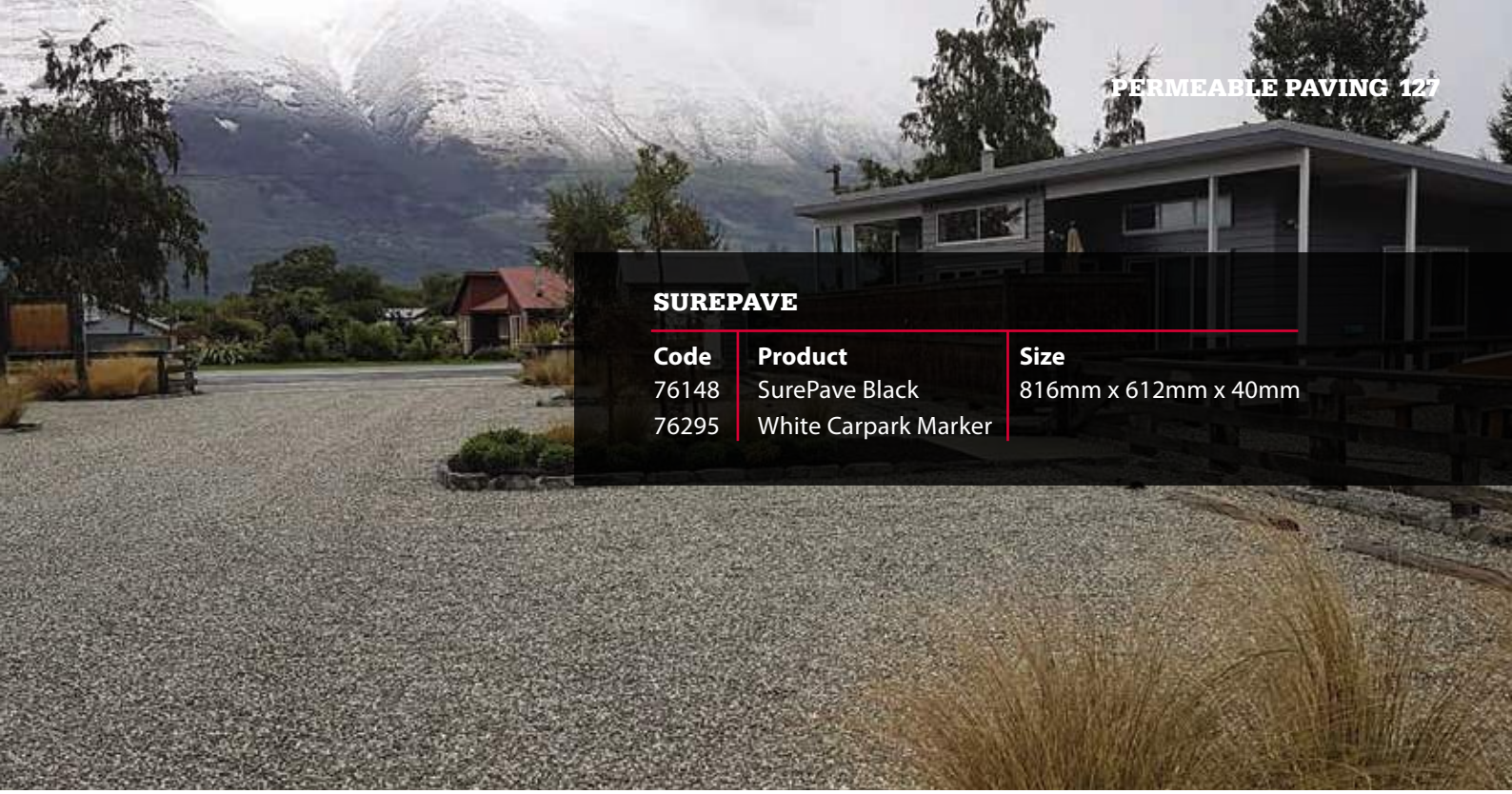
Permeable paving panels are the ideal solution for reinforcing grass, gravel and decorative stone in highly stressed areas, vehicle parking, driveways, golf courses, parks or hard stand areas for boats, trailers and caravans.

The result is an aesthetically pleasing, durable and functional landscape for years to come.



SPECIFICATIONS >

Panel Size	816mm (l) x 612mm (w) x 40mm (h)
Material	100% Recycled High Density Polypropylene
Weight	Approx 4.1 kg/m^2 unfilled (2.05kg/panel)
Compressive Strength	> 700 tonnes m^2 when filled (Test method; NZS 3116: 1991, App A & B)

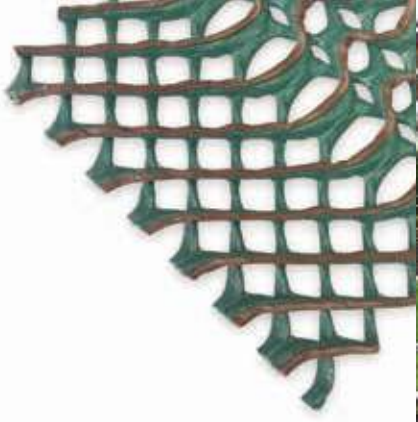


SUREPAVE

Code	Product	Size
76148	SurePave Black	816mm x 612mm x 40mm
76295	White Carpark Marker	

FEATURES

- Free draining **permeable surface**
- **100% recycled** high-density polypropylene
- **Designed to allow turf roots to grow** without restriction
- **Can be uplifted** to access services
- Rated for **residential, commercial and industrial applications**
- **Cost-effective** and **easy to install**
- **Stabilises** sloping terrain
- **Protects** tree roots
- **Car park markers** available



SureFlex

ROLL OUT GRASS PROTECTION

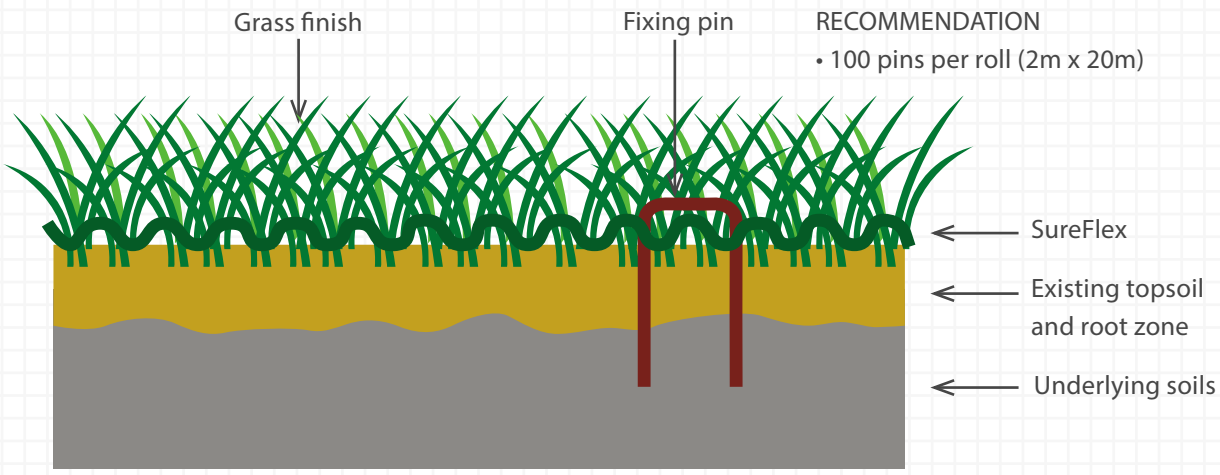
SureFlex grass protection mesh is an effective way to protect grassed areas from pedestrian and vehicle damage.

It is a cost-effective yet robust solution for protecting grassed areas from excessive wear, rutting, skidding, mud and damage caused by pedestrian and vehicle traffic.

Available in two different grades, GP1800 for the more demanding applications and GP1400 for applications where there is only light vehicle or pedestrian movement.

SureFlex is manufactured using an improved method of extrusion and combining more than one material into the product. It has superior slip resistance and is over 30% stronger when compared to other extrusion methods (tested to BS 7976-2). Improved flexibility makes the mesh quicker and easier to install.

SUREFLEX INSTALLATION INFORMATION



SUREFLEX

Code	Product	Roll Size	Area
76292	SureFlex 1400	2m x 20m	40m^2
76293	SureFlex 1800	2m x 20m	40m^2

APPLICATIONS

- **Grass** car parks
- **Golf cart** paths
- Overflow **car parks**
- **Pedestrian** paths
- **Wheelchair access** routes
- **Emergency access**
- **Caravan parks** and bays
- **Event access**

FEATURES

- Quick, **easy installation**
- Excellent **slip resistance**
- **Promotes** natural grass growth
- **Permanent** or **temporary**
- **Strong** & reliable
- **Low visual impact**
- **Lay over** existing grass

AluExcel

ALUMINIUM EDGING

The perfect restraint for hard landscape surface edges, including asphalt, resin bonded or loose gravel, blocks, bricks or paving slab.

AluExcel is made from 6005A grade recycled aluminium and is durable, flexible, smart and discreet. Excellent for surface edge finishing which needs a full thickness of material without roughness, cracking and spilling over into adjoining areas.

An excellent choice of surface edging for both contractors and specifiers because of its simple efficiency, clean lines and speed of installation. The stability and benefit to the environment of aluminium compared to concrete is well documented, making AluExcel the No.1 choice in aluminium landscape edging.

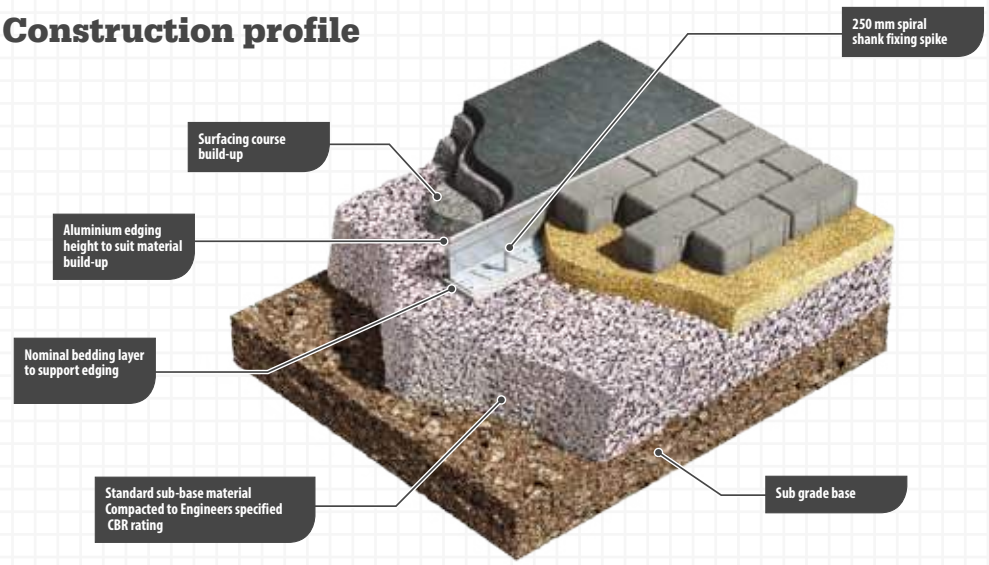
Available in a variety of sizes, including 18mm, 25mm, 40mm, 50mm, 65mm, 75mm, 100mm, 120mm and 150mm high, AluExcel can create both perfectly straight lines and curved features.

FEATURES >

- Strong but **flexible**
- **Alignment strip**
- **Perfectly** straight lines
- **Lightweight** and user friendly
- **Straight** or **curved**

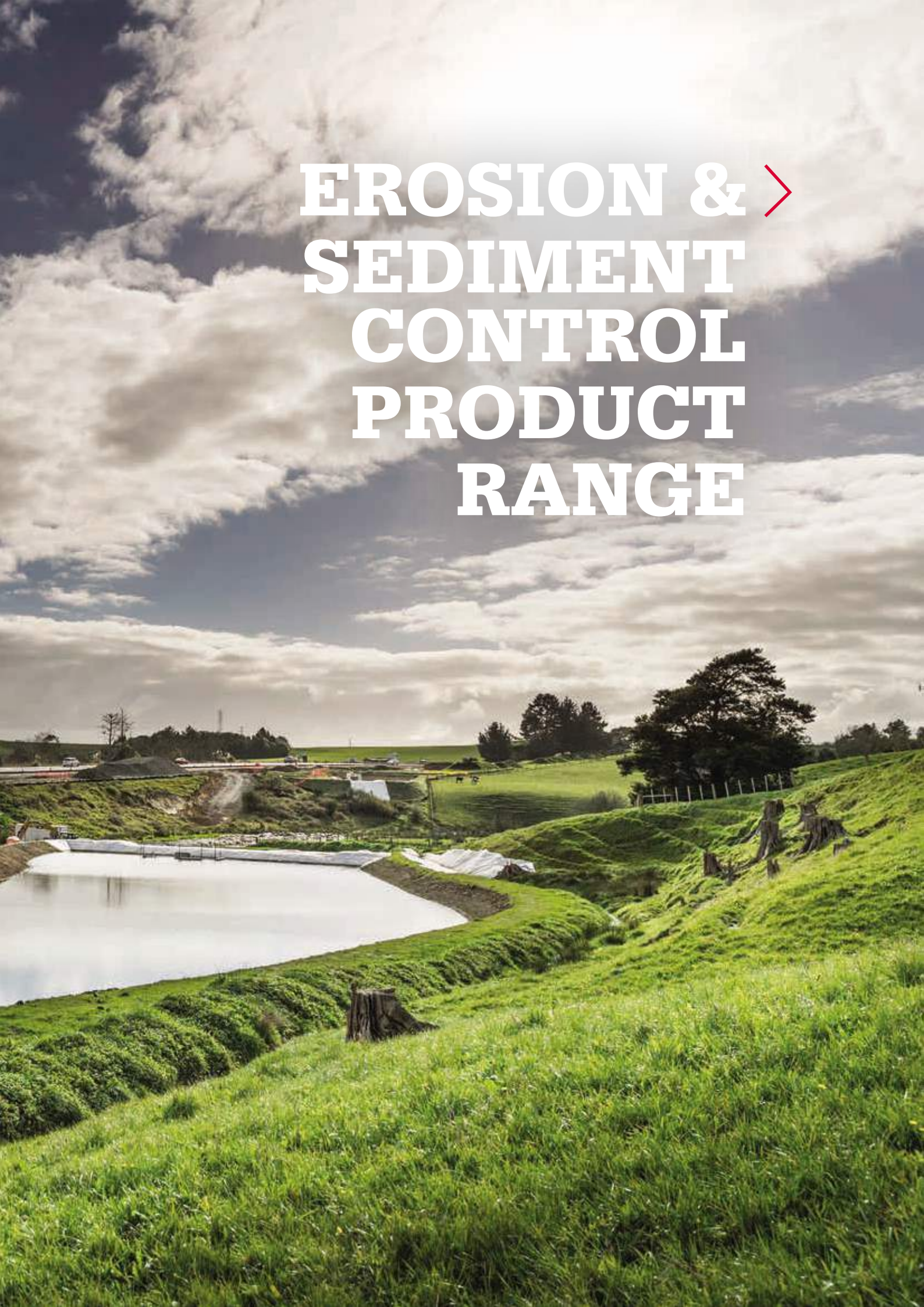
ALUEXCEL CONSTRUCTION PROFILE

Construction profile



ALUEXCEL

Code	Product Size
76759	AluExcel 40mm x 2.75m Kit
76367	AluExcel 50mm x 2.75m Kit
76368	AluExcel 75mm x 2.75m Kit
76366	AluExcel 100mm x 2.75m Kit
76760	AluExcel 120mm x 2.75m Kit
76761	AluExcel 150mm x 2.75m Kit



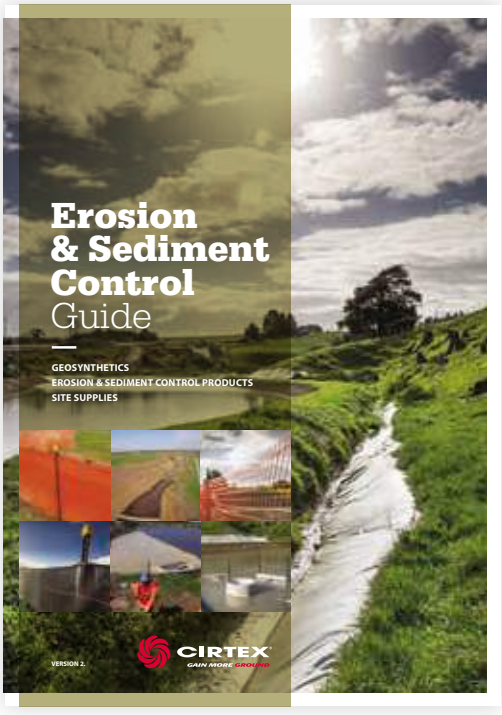
EROSION & SEDIMENT CONTROL PRODUCT RANGE

Erosion & Sediment Control Guide

This guide has everything you need to know about erosion and sediment control including a complete range of products and solutions, installation guides and more.

This guide was created by Cirtex® erosion & sediment control specialists, with additional information from various regional councils around New Zealand.

Contact Cirtex on 0800 247 839 to get your copy of the Cirtex Erosion & Sediment Control Guide.



CIRTEX®
GAIN MORE GROUND

SILT CONTROL & SITE SUPPLIES

- SiltFence
- Super SiltFence
- Barrier Mesh Safety Fence
- Accessories - SiltFence & Barrier Mesh
- Steel Y Posts & Accessories
- Wire & Accessories
- Polythene
- Danline
- Site Safety Tape / Flags
- Signal® Spray Paints & Spray Wands
- Timber Stakes
- Sandbags - Hessian & Polypropylene
- Cirtex Shade Cloth

EROSION CONTROL MATS & ACCESSORIES

- BioCoir Coconut Matting
- BioCoir Logs
- BioCoir Netting
- EcoMat Hessian
- DuraMat Pins
- Ground Staples
- Staple Wasp Gun
- Ecoduty Biodegradable Stakes
- Staple Ease Bio Stake Driver

SILT CURTAINS & DEWATERING BAGS

- EnviroSieve Floating Turbidity Curtains
- EnviroSieve Dewatering Bags

SEDIMENT RETENTION PONDS & DECANTING EARTH BUNDS

- How to build a Sediment Retention Pond
- Pond Decant Kit
- Pond Decant 110mm System
- Decant Y System
- Decant Kit 110mm
- Decant Kit 40mm
- How to build a Decanting Earth Bund
- Anti-Seep Collars
- Flocculant and Bench Testing
- Spill Kits
- Floc Shed

CESSPIT FILTERS & DRAIN PROTECTION

- Cesspit Filter Dam
- Cesspit Filter Bags
- SiltSock
- Filter Pods

CULVERT FLUMES

- AquaDuct
- FlexiFlume

Equipment & Tools

CIRTEX® BATTERY CUTTING TOOLS

The Cirtex battery cutting tool is a safe, quick and effective way of cutting geosynthetic products on the project site, capable of cutting geotextile, geogrid, high strength PET geogrid and geotextile this tool removes the need for unsafe knives on site.

Code	Product	Set Includes
13684	Makita Fabric Cutter	Cutter, charger & battery
13683	Makita Blades	

PNEUMATIC HOG RING GUN

Cirtex pneumatic hog ring guns are a fast and effective tool to assemble and install gabions baskets, rock mattresses, the DuraMesh® MSE wall system and DuraMat TRM. Available for purchase or hire from Cirtex these tools save significant time and hassle on site over using the traditional lacing wire method of construction. The pneumatic hog ring tool require a small portable air compressor to power the tools.

Code	Product	Hire
76549	Pneumatic Hog Ring Gun	Hire

MANUAL HOG RING GUN

Used in the same applications as the pneumatic hog ring guns the Cirtex hand operated hog rung guns are an effective tool suited for use on smaller or remote projects where the use of an air compressor and air hoses is not practical.

Code	Product	Hire
13090	Manual Hog Ring Gun	Hire

CIRTEX HOG RINGS

Cirtex Hog Rings fit both the pneumatic hog rings guns and hand operated hog rings guns and are available in both stainless steel and galvanised coating to suit the different design life requirements found on different projects.

Code	Product	Size
76273	Hog Rings Galv	1600 ctn
76274	Hog Rings Stainless Steel	1600 ctn

PAVESEAL LAYING FRAME

The PaveSeal frame is designed to fit on the front of a wheel loader and is used to deploy PaveSeal onto a bituminous tack coat before the further tack coat and chip seal is applied. The PaveSeal frame unrolls the textile pushing it into the tack coat with an adjustable rubber flap.

Code	Product	Hire
13874	PaveSeal Laying Frame	Hire

GEOTEXTILE / GEOGRID LIFTING BAR

Cirtex has a range of certified spreader bars used to deploy geotextile, geogrid and other geosynthetic products safely and effectively on the project site. This certified spreader bar connects to a suitable excavator or loader using chains.

Code	Product	Hire
76535	Spreader Bar Frame	Hire

PET HIGH STRENGTH GEOTEXTILE LAYING FRAME

This frame attaches to a wheel loader or excavator and is used to deploy the heavy rolls of PET high strength geotextile. Having the sliding centre poles from each side of the frame removes the need to handle heavy centre poles and makes changing rolls a simple and quick task.

Code	Product	Hire
13604	Heavy Duty Spreader Bar Frame	Hire

Cirtex® Consignment Containers

Ask us about the option of an on site consignment container, allowing 24/7 access to products. When your team needs to respond to those urgent unexpected environmental events, waiting for product to be delivered or sending staff off site to pick up product causes avoidable costly downtime. Cirtex provides a full range of environmental and site supply products customised to suit the specific requirements of your site.

Cirtex Nationwide Distribution

Cirtex understands the importance of having stock available to enable prompt fulfilment of orders. Cirtex has state-of-the-art centrally located distribution centres in Manukau, Silverdale, Thames, Tauranga and Christchurch, with high use stock held in other strategic locations around New Zealand.

Contact us:

Ph: +649 625 4389

email: civil@tropex.co.nz

TROPEX CIVIL

OUR EXPERIENCE
YOUR SUCCESS

Tropex Civil provides for projects in the Pacific Islands and Papua New Guinea only