SAVING NATURE.

CAPABILITY STATEMENT

SAVING NATURE.

At Protector we are focused on improving the quality of our waterways by supplying products that are designed to capture and contain pollution in stormwater runoff for many applications. Contaminants such as hydrocarbons, suspended solids, plastic rubbish and dissolved nutrients are removed by utilising absorption, retention, filtration and capture processes. These stormwater systems will deliver cleaner water back into the environment, saving nature for future generations.

Protector is an Australian family owned and operated stormwater treatment and fiberglassing company. Protector's 18 years of fabrication experience is a result of continuous improvement in product design and manufacturing innovation.

Our products are renowned for their quality and are engineered to Australian standards BS4994-1987 and ASME RPT1. Protector has improved the ease of device installation by eliminating the need for confined space entry and the requirement to access the base of site excavations.

Quality control procedures ensure each product is manufactured to specification and post production, each unit is inspected and factory tested to industry standards.

Protector products are constructed using the advanced chop hoop filament winding process which ensures circumferential as well as longitudinal strength. Every Protector product has a smooth molded resin rich inner corrosion barrier layer and an external resin barrier. Being manufactured in FRP (Fibre Reinforced Plastic) Protector products are light, easy to handle and easy to install.

FRP composites are a sustainable material that is reflected through its physical characteristics resulting in longer service life that exceeds traditional materials. The weight saving advantages lower construction and transport costs, reducing environmental impact. FRP products are high strength and are far more resistant to the effects of ageing, weathering, and degradation in severe environments. Maintenance is improved by the smooth internal molded finish providing excellent protection against scum accumulation. Fibre Reinforced Plastic is not susceptible to rust and offers excellent corrosion resistance.

PROTECTOR TREATMENT TRAINS

Protector is able to provide with solutions to every part of the treatment train with our innovative and efficient designs. Whether it be primary treatment systems in the form of gross pollutant traps, secondary treatment systems for removal of sediments, fine particles and attached pollutants, to tertiary treatment for removal of extremely fine particles, nutrients, organic compounds and heavy metals. We also provide solutions to all your retention needs in the treatment train, allowing for complete pollution removal in the treatment phase, to storage and retention systems in downstream phases.

PRIMARY TREAMENT

Remove gross pollutants

SECONDARY TREAMENT

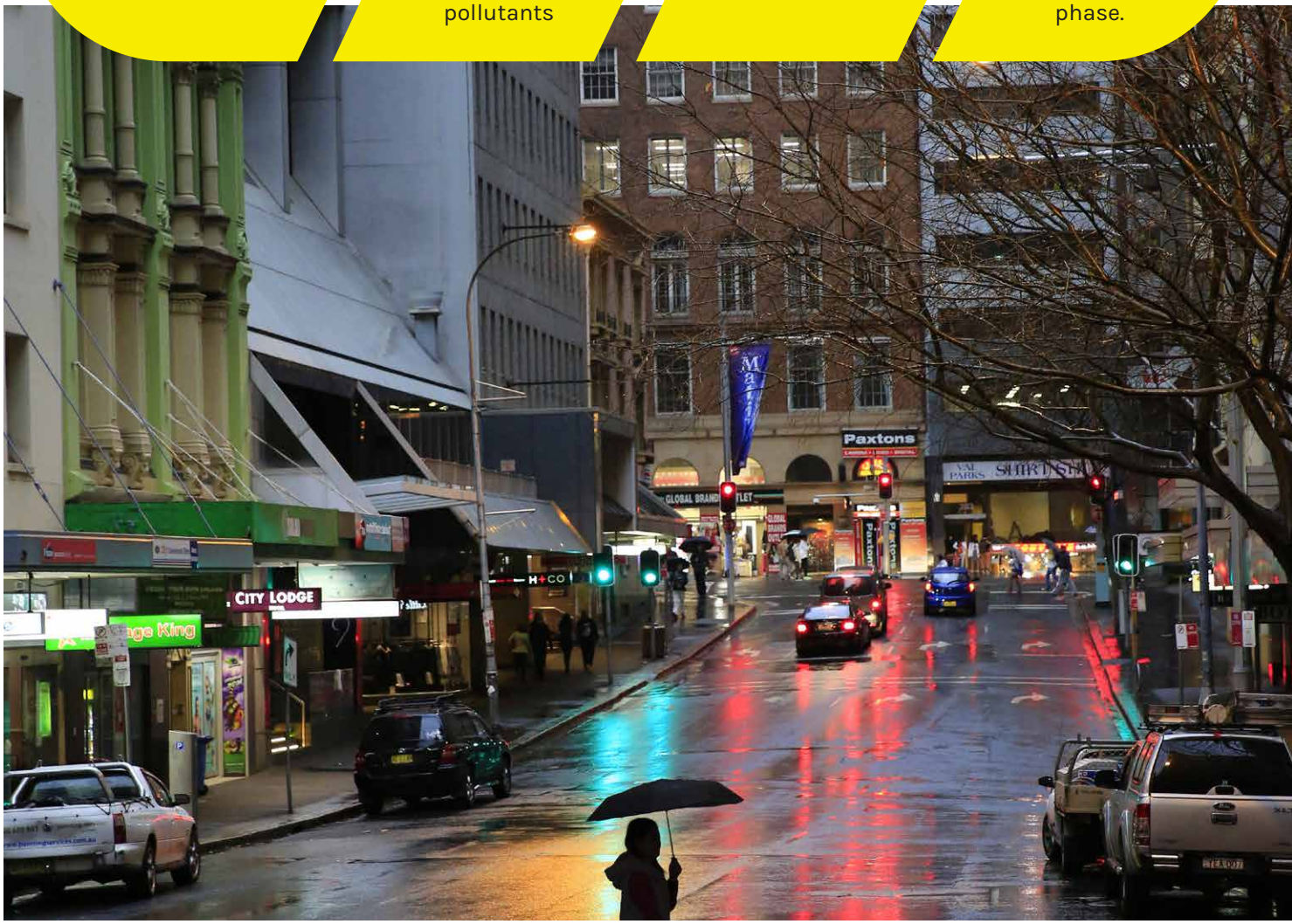
Remove fine particles, sedimention & attached pollutants

TERTIARY TREAMENT

Removes very fine/colloidal nutrients & heavy metals

RETENTION SYSTEMS

Provide Storage and detention systems past the treatment phase.



PERRY'S FUEL DISTRIBUTION HQ SERVICE STATION CRYSTAL BROOK

HYDROPROTECTOR AND HYDROVAULT

Perrys Fuel Distribution is a major fuel distributor in Australia, and they recently undertook a project to build a new headquarters in Crystal Brook. As part of their commitment to environmental sustainability, Perrys decided to install a Hydroprotector and a 100,000 liter retention tank to manage their stormwater runoff.

The Hydroprotector is a cutting-edge stormwater filtration system that utilizes advanced technologies to remove pollutants and contaminants from stormwater. The Hydroprotector was installed at the site of the new headquarters to ensure that the stormwater runoff from the site was free of pollutants before being discharged into the local waterways. The Hydroprotector system is designed to remove sediment, oil, grease, and other pollutants from stormwater, ensuring that the water is clean and safe for the environment.

In addition to the Hydroprotector, Perrys also installed a 100,000 litre retention tank at the site. This large tank is designed to store stormwater runoff, allowing it to be slowly pumped to the local waterways over time. The retention tank is made from high-quality FRP materials and is designed to be corrosion-resistant, ensuring its longevity and reliability.

The Hydroprotector and retention tank system at the new Perrys headquarters in Crystal Brook is a testament to the company's commitment to environmental sustainability. By implementing these innovative stormwater management solutions, Perrys is able to protect the local environment and ensure that their operations have a minimal impact on the surrounding ecosystem. The system also helps to ensure that Perrys remains in compliance with local regulations and standards for stormwater management. Overall, the Hydroprotector and retention tank system at Perrys Crystal Brook is an excellent example of how businesses can integrate environmental sustainability into their operations while still maintaining their bottom line.


CX300C
PROTECTOR

TOYOTA MATERIALS HANDLING DANDENONG SOUTH

ECOPROTECTOR AND
ENVIROPROTECTOR

Toyota Materials Handling is a manufacturing facility in Dandenong South, Victoria, Australia, that underwent a major infrastructure project involving the installation of new machinery, equipment, and processes. One of the project's major environmental concerns was the potential for stormwater pollution that could harm local waterways and ecosystems.

Protector Australia's EcoProtector and EnviroProtector filter systems were installed. These passive stormwater treatment devices use a series of filter cartridges to remove pollutants, such as sediment and debris, from stormwater runoff. They can handle high volumes of runoff, making them effective solutions for managing stormwater pollution.

The systems are easy to install and maintain, with a simple design that allows for easy access and cleaning of the filter cartridges. This makes them ideal solutions for large manufacturing facilities like Toyota Dandenong South.

The EcoProtector and EnviroProtector systems helped to protect local waterways and ecosystems from the harmful effects of stormwater pollution, and were able to handle the high volumes of stormwater runoff generated by the large manufacturing facility.

EDMONDSON PARK PUBLIC SCHOOL

XTREAMPROTECTOR

Protector Australia was tasked with designing and implementing a Water Sensitive Urban Design (WSUD) solution for the site at Edmondson Park Public School. The site needed to have Trapits installed in each pit and 29 XTR filters in a Water Quality Chamber with a surface area of 10 square meters, as required by the MUSIC model. Protector's solution proved to be the preferred option for the plumber and builder involved in the project.

Protector's WSUD solution was designed to effectively manage stormwater runoff and improve water quality, while also being easy to install and maintain. The Trapits, which are designed to capture and retain litter and debris, were installed in each pit to prevent pollutants from entering the stormwater system. The XTR filters were installed in the Water Quality Chamber, which allows for greater contact time and filtration of pollutants, resulting in improved water quality.

Protector's solution was selected as the preferred option due to its proven effectiveness in managing stormwater runoff, as well as its ease of installation and maintenance. The plumber and builder were impressed with the high quality of the components used in the solution, as well as the attention to detail in the design and installation process.

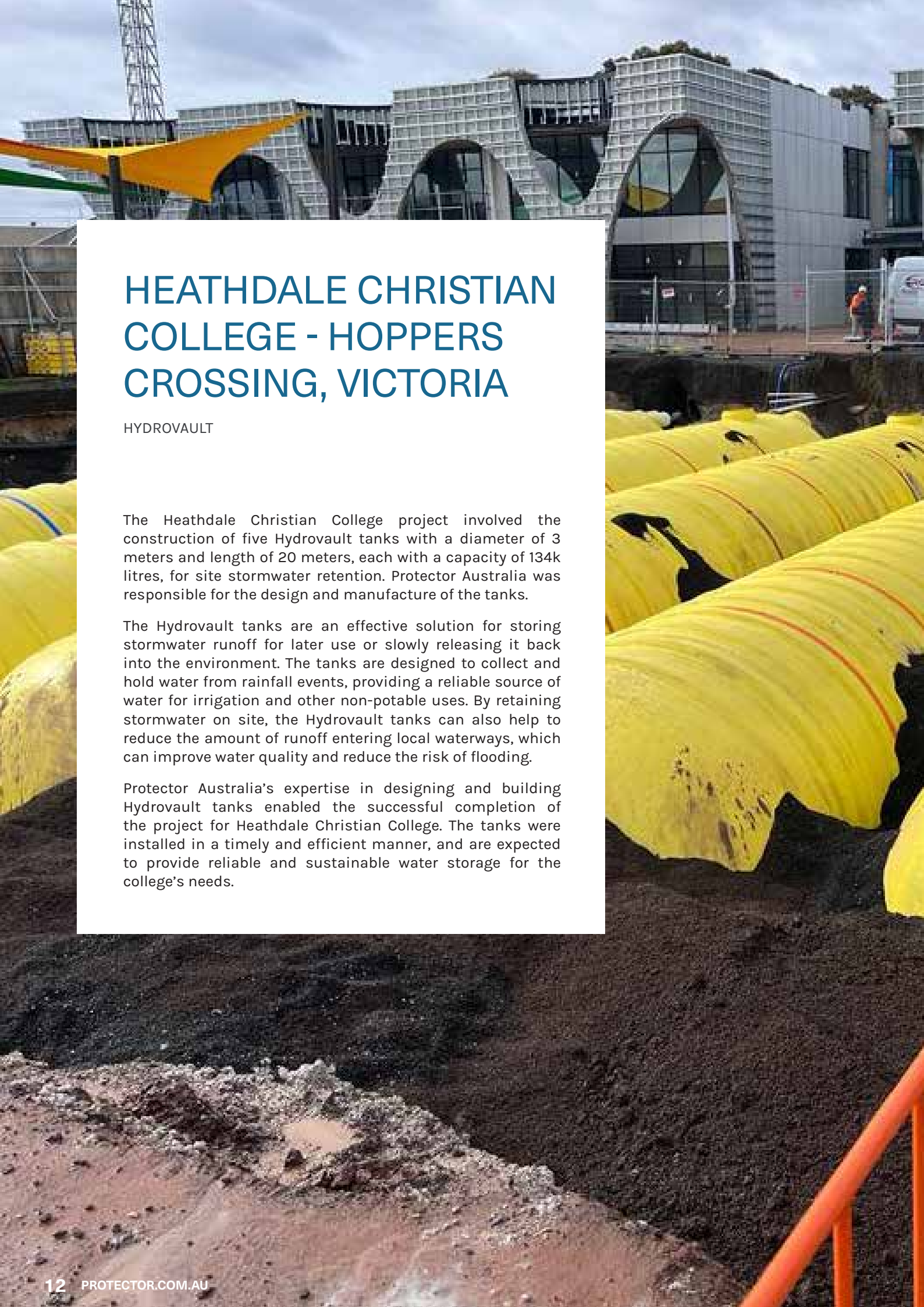
The successful implementation of Protector's WSUD solution at Edmondson Park Public School has not only helped to improve water quality in the area, but also serves as an example of effective stormwater management and the importance of sustainable urban design practices.

ROCKHAMPTON AIRPORT UPGRADE

STORMPROTECTOR

The Rockhampton Airport upgrade project aimed to improve its facilities, including the runway, taxiways, and terminal building. The project team identified the potential impacts of stormwater pollution on local lagoons and Fitzroy River waterways and ecosystems as a significant environmental concern. To address this issue, they chose to use Protector's offline Stormprotector system, designed to capture and retain sediment, debris, and other pollutants from stormwater runoff. The system was installed at various locations throughout the airport site and designed to handle high volumes of runoff.

The Stormprotector system is an effective solution for managing stormwater pollution, making it an ideal choice for large infrastructure projects like the Rockhampton Airport upgrade. The system is easy to install and maintain, providing passive stormwater treatment to address pollution risks from contaminants such as Jet-A fuel. Stormwater treatment devices like the Stormprotector can help to mitigate the risks of pollution from contaminants in airport stormwater runoff, protecting both the environment and human health.



HEATHDALE CHRISTIAN COLLEGE - HOPPERS CROSSING, VICTORIA

HYDROVAULT

The Heathdale Christian College project involved the construction of five Hydrovault tanks with a diameter of 3 meters and length of 20 meters, each with a capacity of 134k litres, for site stormwater retention. Protector Australia was responsible for the design and manufacture of the tanks.

The Hydrovault tanks are an effective solution for storing stormwater runoff for later use or slowly releasing it back into the environment. The tanks are designed to collect and hold water from rainfall events, providing a reliable source of water for irrigation and other non-potable uses. By retaining stormwater on site, the Hydrovault tanks can also help to reduce the amount of runoff entering local waterways, which can improve water quality and reduce the risk of flooding.

Protector Australia's expertise in designing and building Hydrovault tanks enabled the successful completion of the project for Heathdale Christian College. The tanks were installed in a timely and efficient manner, and are expected to provide reliable and sustainable water storage for the college's needs.

TRAP-IT FILTER INSERT

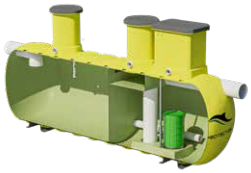
The Protector Trap-It Filter Insert is a highly effective solution for capturing gross pollution in stormwater pits. It is designed to capture plastic, sediments, and organic matter, providing a primary treatment for stormwater runoff. The Filter Insert can be easily retrofitted into existing infrastructure and is typically installed before nutrient removal filters. The Protector Trap-It provides an efficient and cost-effective alternative to traditional end-of-line Gross Pollutant Traps for small to medium catchments. Its compact design and low cost make it an ideal choice for sites seeking an effective solution for managing gross pollution in stormwater runoff. The Protector Trap-It Filter Insert provides reliable protection for the environment and helps to ensure clean water is returned to the ecosystem.

ECOPROTECTOR

The Ecoprotector is a highly effective Gross Pollutant Trap (GPT) designed for the removal of trash and litter from stormwater runoff. With a particulate removal capacity down to 3mm, it effectively captures solid debris, sediment, and hydrocarbons. The Ecoprotector is designed for low velocity conditions, making it a perfect solution for residential subdivisions, roads, car parks, industrial sites, and other impervious areas. As a primary treatment device, it helps to reduce the amount of pollutants entering the environment, protecting the ecosystem and ensuring clean water is returned. The Ecoprotector is a robust, reliable, and cost-effective solution for managing stormwater pollution, making it a popular choice for many sites seeking an effective GPT.

HYDRO C.D.S

HydroCDS is an advanced gross pollutant trap that utilizes a combination of vortex separation and indirect screening to remove particles larger than 1mm from stormwater runoff. Its unique design enables it to handle higher flows, prevent screen blinding, and retain a wide range of pollutants. Additionally, the internal hydrocarbon baffle captures free hydrocarbons and oils and prevents their release into the environment. If flows exceed the treatable rate, an internal weir diverts excess water to the outlet, while treated and bypass flows exit via the outlet pipe. With its high-performance capabilities, HydroCDS is an efficient and effective solution for managing urban stormwater quality and reducing the impact of urban runoff on natural ecosystems.



STORMPROTECTOR

The Stormprotector is a high-performance dual chamber stormwater treatment system designed to effectively manage stormwater pollution. Equipped with an internal bypass and coalesce filtration system, it provides complete and efficient treatment. The large retention and settle chamber of the Stormprotector ensures a smooth flow of water to the secondary chamber, where secondary filtration takes place. Fine particulates, sedimentation, and attached particles are filtered to meet the requirements of your site. The Stormprotector is a comprehensive solution for managing stormwater pollution and ensuring clean water is returned to the environment. Its efficient design and advanced filtration technology make it an ideal choice for any site seeking a reliable and effective stormwater treatment system.

HYDROPROTECTOR

Hydroprotector systems are autonomous and gravity operated, therefore will function without electricity. They are engineered to meet the European Standard EN858:1: 2002 and have been independently tested for discharge water quality of less than 5mg/l and also achieve percentage removal rates of nitrogen and phosphorus.

All Hydroprotector models are independently certified for hydrocarbon spill capture volumes. Hydraulic testing has been carried out to ensure capacity and flowrate accuracy. The Hydroprotector is a full retention separator that does not allow any liquids to be bypassed, therefore all flows into the unit are treated.

XTREAMFILTER

The Xtreamfilter system is an advanced solution for stormwater treatment. Its media-filled cartridges absorb and retain pollutants like phosphorus, nitrogen, fine silt, and heavy metals via an upflow process. The hydraulic head forces water through the specialized filter media, providing effective removal of pollutants. After a rain event, the filter backwashes accumulated particles, keeping it ready for the next inflow. The Xtreamfilter is designed for long-term performance and low-cost maintenance. The backwashed material can be easily removed by an evacuation truck. It's an effective and convenient solution for stormwater treatment, with its advanced design and efficient performance, making it a top choice for those looking to protect the environment.

XTREAMPROTECTOR

The XtreamFilter is one of Protector's most efficient tertiary treatment filters, removing sedimentation, gross pollutants, hydrocarbons, heavy metals, nutrients, and organic substances. Water enters the flame dip tube and into the FRP tank or concrete encasing. A silt baffle and raised floor prevent sedimentation buildup interfering with filter flows. As water rises, it enters the inlet legs and passes through a 2mm wire mesh. The water then flows through three circular cylinder layers of filtration media, each layer filtering specific contaminants. Media is separated by a 1mm wire mesh for further sediment removal. Water flows into the inner riser tube, into the retention tank, and out of the central dropper tube.

ENVIROSAVE

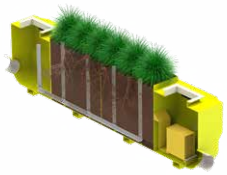
The Envirosave is an all-in-one solution for managing stormwater runoff. The system combines a Gross Pollutant Trap (GPT) and Nutrient Filter in one compact unit. The GPT removes large debris and pollutants, while the Nutrient Filter removes excess nutrients that harm aquatic life. The internal bypass eliminates the need for extra pipes and pits, saving space and reducing costs. Ideal for residential, commercial, and industrial use, this system requires minimal maintenance and is easy to clean. Enjoy the benefits of advanced stormwater management technology in a compact, low-maintenance, and cost-effective solution with the Stormwater Treatment System. Invest in a cleaner and healthier environment with this innovative solution.

ENVIROPROTECTOR

The Enviroprotector is a cutting-edge stormwater filter designed for highly polluted traffic areas. Made from durable fiberglass, it's easy to install within new or existing chambers on site. The unique up-flow process of the Enviroprotector minimizes head drop, ensuring efficient operation. The stormwater is treated through several processes, including sedimentation, filtration, adsorption, and precipitation, resulting in substantial reduction of heavy metals, total suspended solids, and nutrients. The Enviroprotector is the ideal solution for managing stormwater pollution in heavy traffic areas.

BIOPROTECTOR

The Bioprotector is a versatile and innovative stormwater filtration system that combines physical and biological filtration processes for a complete and effective solution to remove a wide range of contaminants. The system's unique design blends seamlessly into any urban setting, providing an aesthetic touch to the environment. The Bioprotector can be configured for a variety of settings, from commercial and residential to urban and industrial. It's easy to install in new construction sites and can be retrofitted into existing urban areas. The organic look of the Bioprotector adds an attractive element to its surroundings while fulfilling its primary function as a filtration system. This system is an ideal solution for managing stormwater pollution in a wide range of urban settings.

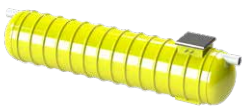


STORMBRAKE

The Stormbrake system is one of Protectors most advanced designs, utilizing modern and natural processes of filtration to provide a unique, low impact solution to our environmental needs. It is a system that does not require any impermeable bodies for installation, nor does it require concrete casting of any kind, simply requiring natural systems such as soil and compacted stone making it a natural filtration imitation. It is a single FRP shell, open bottomed design that easily conjoins to create large arrangements, that stores water as well as simultaneously filtering it. It combines the natural filtration and biofiltration techniques of soil and compressed rocks to remove nutrients, sedimentation and attached particles from the water.

HORIZONTAL STORAGE SYSTEMS

The Horizontal Storage Tank systems are made from fiber reinforced polymers (FRP) and use chop hoop filament winding techniques for strength and durability. These tanks are corrosion-resistant and suitable for various applications, including stormwater management. They can be equipped with baffles, pumping stations, and pressurization options to meet specific needs. The tanks are an effective solution for storing, detaining, and retaining water in stormwater management applications. The Horizontal Retention systems can be placed anywhere in the treatment process and are the final stage of the water treatment process. These retention tanks provide a flexible and customizable solution to meet specific storage needs.

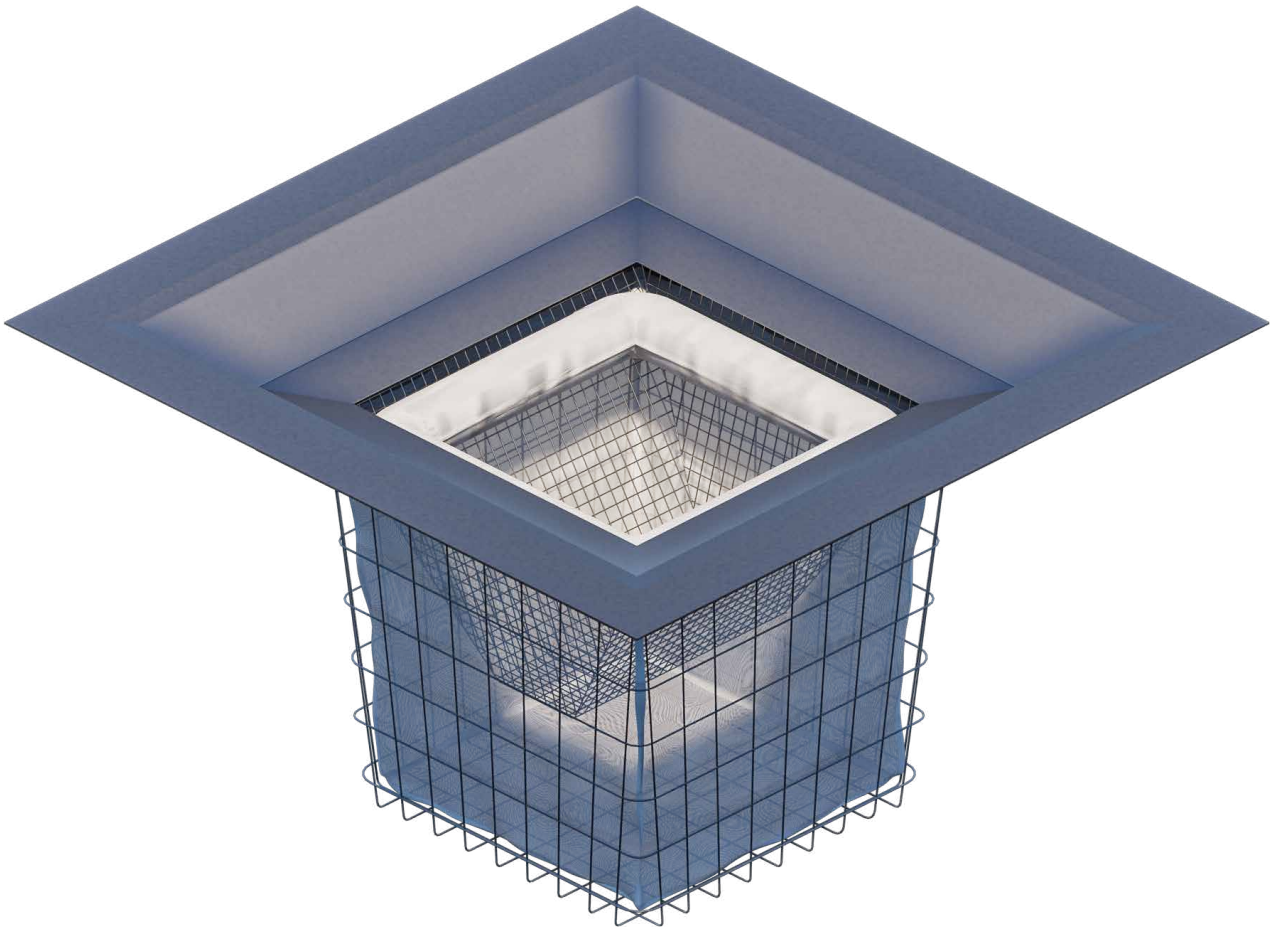


TRAP-IT FILTER

PRIMARY TREATMENT

The Protector Trap-It Filter Insert is a highly efficient tool for removing gross pollutants from stormwater runoff. With the ability to capture plastics, sediments, and organic matter, it effectively provides primary treatment for stormwater. This filter insert can be conveniently retrofitted into existing stormwater infrastructure and is often installed prior to nutrient removal filters. With its compact design and low cost, the Protector Trap-It is the perfect solution for small to medium catchment areas seeking to manage gross pollution in stormwater. The Filter Insert not only provides reliable protection for the environment but also helps to maintain clean water in the ecosystem. This cost-effective alternative to traditional Gross Pollutant Traps is a popular choice for many sites looking for an effective solution for managing stormwater pollution.

- MULTISTAGE PHYSICAL FILTRATION
- EASY TO INSTALL AND MAINTAIN
- EFFECTIVE REMOVAL OF VARIOUS SIZE GROSS POLLUTANTS
- OPTIONAL OIL BOOM FOR CONTAINING SMALL HYDROCARBON SPILLS



RESIDENTIAL AREAS

PARK LANDS

SPORTING FACILITIES

HIGH PEDESTRIAN TRAFFIC

INDUSTRIAL / COMMERCIAL COMPLEXES

SHOPPING PRECINCTS

ROADWAYS

ECOPROTECTOR

PRIMARY TREATMENT

- HARD AND SOFT PLASTICS REMOVAL
- EASY ACCESS FOR SCHEDULED MAINTENANCE
- REMOVAL OF GROSS POLLUTANTS AND SEDIMENT DOWN TO 3MM
- STRONG FRP CONSTRUCTION WITH WEIGHT SAVING ADVANTAGE

The Ecoprotector is a highly efficient Gross Pollutant Trap (GPT) designed to remove trash, litter and other solid debris from stormwater runoff. It boasts a particle removal capacity down to 3mm, effectively capturing solid waste, sediment, and hydrocarbons. Ideal for low velocity conditions, the EcoProtector is a great solution for residential neighborhoods, roads, parking lots, industrial sites and other impervious areas. By reducing the amount of pollutants entering the environment, it helps to protect the ecosystem and ensures that clean water is returned to the environment. The Ecoprotector is a durable, dependable and cost-effective way of managing stormwater pollution, making it a favored choice among many looking for a top-performing GPT.

RESIDENTIAL SUBDIVISIONS

PRIMARY GROSS POLLUTANTS, OILS AND SEDIMENT

COMBINED SEWER OVERFLOWS

STORMWATER HARVESTING PROJECTS

COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

MAIN STORMWATER DRAINAGE SYSTEMS

RETROFITTING TO EXISTING STORMWATER DRAINAGE SYSTEMS

HYDROCDS

PRIMARY TREATMENT

HydroCDS is a gross pollutant trap that uses vortex separation and indirect screening to remove particles larger than 1mm from stormwater runoff. With its innovative screen design and internal configuration, HydroCDS can handle higher flows than other similar technologies, while preventing screen blinding and retaining floatables, settleable solids, and neutrally buoyant pollutants.

Stormwater enters the treatment chamber via one or more inlet pipes, and the specially designed inlet initiates a vortex that concentrates pollutants in the center of the chamber. The system's hydrocarbon baffle retains free hydrocarbons and oils, while excess flows are diverted to the outlet via an internal weir.

HydroCDS is an effective and efficient solution for managing urban stormwater quality, with its superior performance compared to other similar devices. By capturing gross pollutants and preventing them from entering the environment, HydroCDS helps to reduce the impact of urban runoff on natural ecosystems.

- VORTEX SEPARATION AND INDIRECT SCREENING
- INNOVATIVE DESIGN HANDLES HIGHER FLOWS
- INTERNAL WEIR DIVERTS EXCESS WATER
- HYDROCARBON BAFFLE THAT CAPTURES FREE HYDROCARBONS AND OILS

RESIDENTIAL SUBDIVISIONS

PRIMARY GROSS POLLUTANTS, OILS AND SEDIMENT

COMBINED SEWER OVERFLOWS

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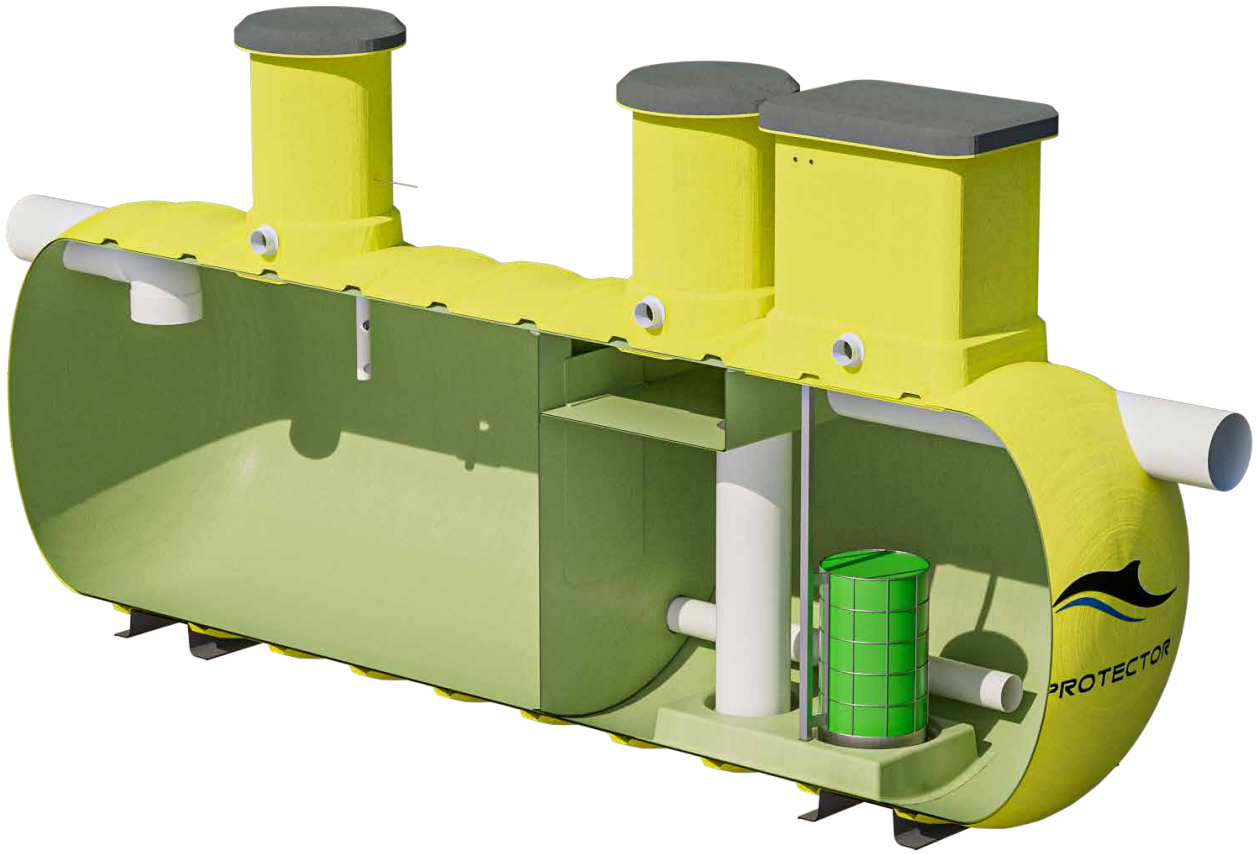
STORMPROTECTOR

SECONDARY TREATMENT

- DUAL CHAMBER DESIGN FOR COMPLETE AND THOROUGH TREATMENT OF STORMWATER.
- ADVANCED FILTRATION TECHNOLOGY IN THE SECONDARY CHAMBER TO REMOVE FINE PARTICULATES, SEDIMENT, AND ATTACHED PARTICLES.
- EQUIPPED WITH AN INTERNAL BYPASS AND COALESCE FILTRATION SYSTEM FOR COMPREHENSIVE POLLUTION MANAGEMENT.
- CUSTOMIZABLE TO MEET SPECIFIC SITE REQUIREMENTS, MAKING IT SUITABLE FOR BOTH SMALL AND LARGE CATCHMENTS.

The Stormprotector is a cutting-edge stormwater treatment system that is designed to tackle pollution in an efficient and effective manner. With its dual chamber design, it offers complete and thorough treatment of stormwater. The large retention and settle chamber allows for a smooth flow of water into the secondary chamber, where advanced filtration technology removes fine particulates, sediment, and attached particles. The Stormprotector is equipped with an internal bypass and coalesce filtration system, providing a comprehensive solution to manage stormwater pollution. Whether it's for a small or large catchment, this system can be customized to meet the specific requirements of your site. Its reliable and efficient design makes it an ideal choice for any organization looking for an effective way to keep the environment clean and ensure the return of clean water to the ecosystem.



SERVICE STATIONS

BULK FUEL STORAGE FACILITIES

ELECTRICAL SUBSTATIONS

TRANSPORT REFUELING AREAS

WINDFARMS

AIRCRAFT APRONS

ASPHALT PLANTS

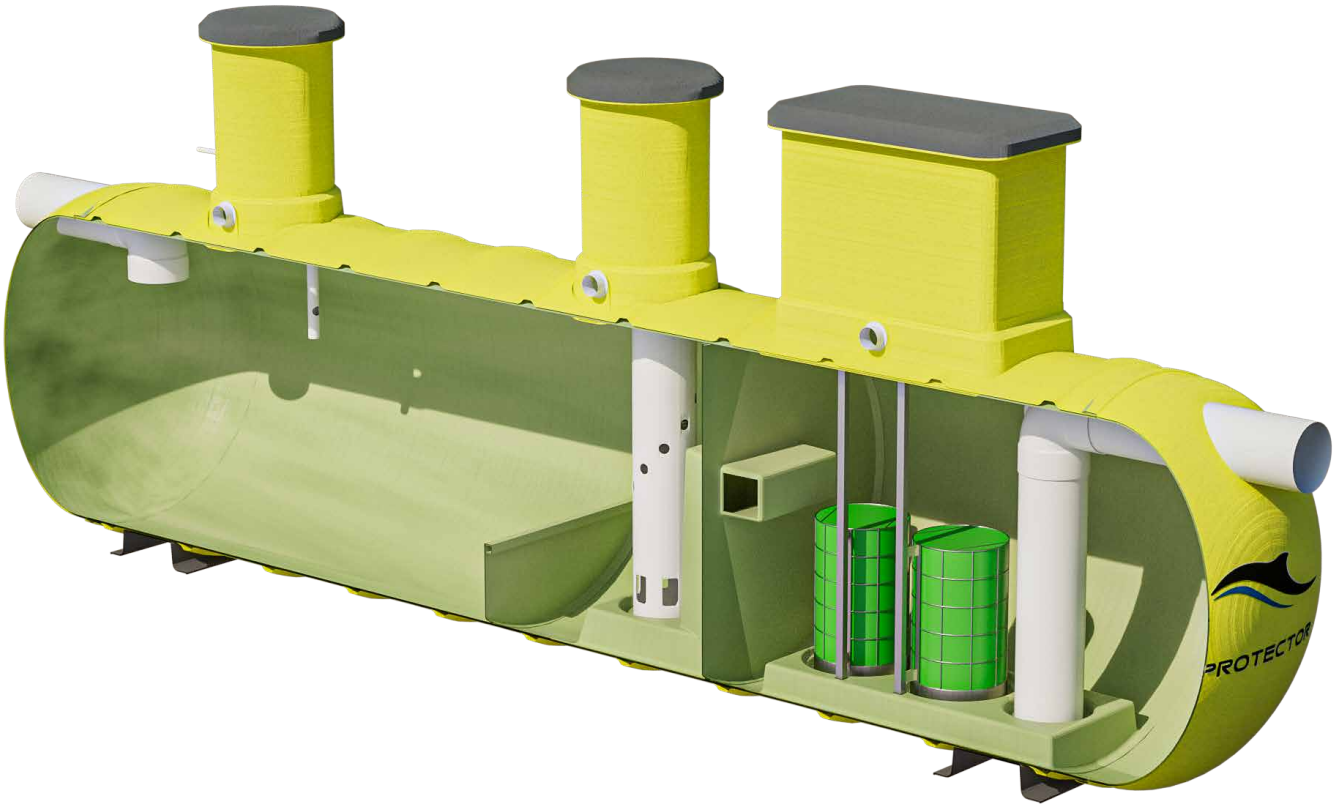
MINING WASH DOWN AREAS

HYDROPROTECTOR

SECONDARY TREATMENT

The HydroProtector is an innovative and effective stormwater treatment system that operates without electricity, making it a practical solution for a wide range of applications. The HydroProtector has been rigorously tested and certified to meet the European Standard EN858:1:2002, ensuring that the discharge water quality is of the highest standard. With a full retention separator design, the HydroProtector ensures that all flows are treated, resulting in a significant reduction in nitrogen and phosphorus levels. The HydroProtector has also been independently certified for its hydrocarbon spill capture volumes, demonstrating its effectiveness in removing harmful pollutants from stormwater runoff. With its efficient and reliable design, the HydroProtector is a leading choice for organizations seeking a sustainable and cost-effective solution for managing stormwater pollution.

- INDEPENDENTLY CERTIFIED TO CLASS 1, EN 858.1 STANDARD
- FAIL SAFE AUTOMATIC CLOSURE DEVICE
- INTEGRATED INLET FLAME TRAP
- STRONG FRP DUAL CHAMBER CONSTRUCTION WITH WEIGHT SAVING ADVANTAGE
- OIL MONITORING SENSOR WITH AUDIBLE AND VISUAL ALARM
- SECONDARY CHAMBER FITTED WITH A COALESCER FILTER



SERVICE STATIONS

BULK FUEL STORAGE FACILITIES

ELECTRICAL SUBSTATIONS

TRANSPORT REFUELING AREAS

WINDFARMS

AIRCRAFT APRONS

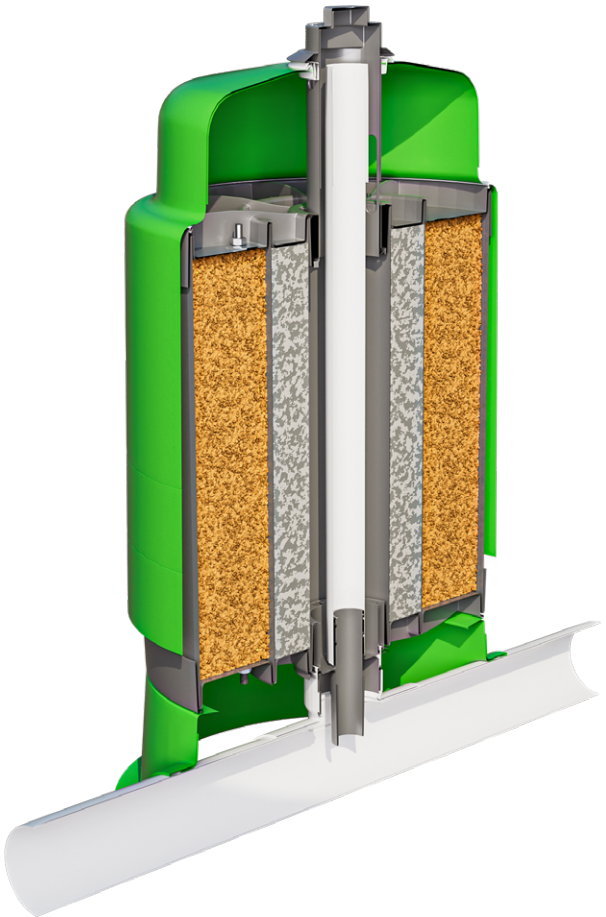
ASPHALT PLANTS

MINING WASH DOWN AREAS

XTREAMFILTER

- MODULAR DESIGN
- HIGH FLOW RATE
- HIGH REMOVAL EFFICIENCY
- EASY MAINTENANCE.

The XtreamFilter is a cutting-edge technology for stormwater treatment that effectively removes pollutants like phosphorus, nitrogen, fine silt, and heavy metals. The media-filled cartridges use an upflow process to absorb and retain these harmful substances, providing thorough treatment of the stormwater. The hydraulic head in the system forces the water through the specialized filter media, ensuring efficient removal of pollutants. After each rain event, the filter backwashes to get rid of accumulated particles, keeping it prepared for the next inflow. The XtreamFilter is engineered for long-term performance and low-maintenance costs, with its backwashed material easily removable by evacuation trucks. With its advanced design and efficient performance, the XtreamFilter is a top choice for those seeking an effective and convenient solution for stormwater treatment, while also protecting the environment.



RESIDENTIAL SUBDIVISIONS

PRIMARY GROSS POLLUTANTS, OILS AND SEDIMENT

COMBINED SEWER OVERFLOWS

STORMWATER HARVESTING PROJECTS

COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

MAIN STORMWATER DRAINAGE SYSTEMS

RETROFITTING TO EXISTING STORMWATER DRAINAGE SYSTEMS

ENVIROSAVE

SECONDARY AND TERTIARY TREATMENT

The Envirosave is a compact and efficient solution for managing stormwater pollution. This all-in-one unit combines a Gross Pollutant Trap (GPT) and Nutrient Filter to provide complete and effective stormwater treatment. The GPT removes large debris and pollutants, while the Nutrient Filter removes excess nutrients that can harm aquatic life. The system's internal bypass eliminates the need for extra pipes and pits, making it an ideal choice for residential, commercial, and industrial sites. With minimal maintenance and easy-to-clean features, the Envirosave is a cost-effective and convenient solution for protecting the environment. Invest in a cleaner and healthier future with this advanced stormwater treatment system.

- ADVANCED FILTRATION TECHNOLOGY.
- CUSTOMIZABLE TO SPECIFIC SITE REQUIREMENTS.
- EASY TO INSTALL AND MAINTAIN.
- HIGH TREATMENT FLOW RATES.
- REMOVAL OF GROSS POLLUTANTS AND SEDIMENT DOWN TO 3MM
- STRONG FRP CONSTRUCTION WITH WEIGHT SAVING ADVANTAGE

RESIDENTIAL SUBDIVISIONS

PRIMARY GROSS POLLUTANTS, OILS AND SEDIMENT

COMBINED SEWER OVERFLOWS

STORMWATER HARVESTING PROJECTS

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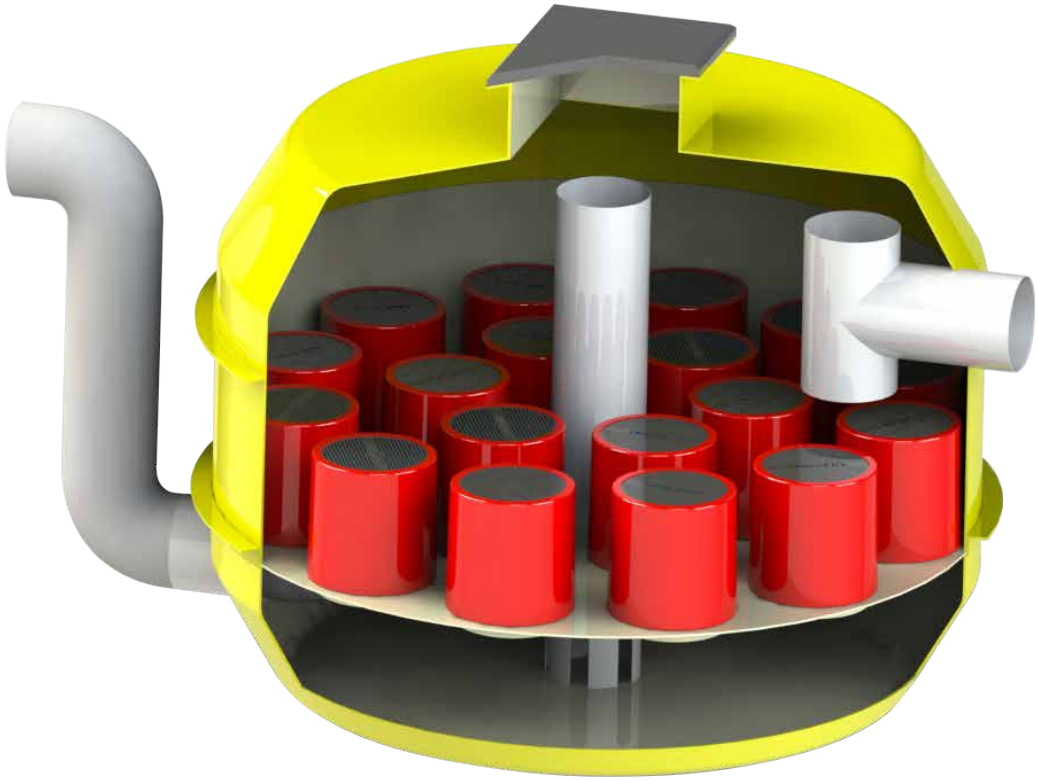
RETROFITTING TO EXISTING STORMWATER DRAINAGE SYSTEMS

ENVIROPROTECTOR

TERTIARY TREATMENT

- CUSTOMIZABLE TO SITE REQUIREMENTS.
- HIGH POLLUTANT REMOVAL RATES.
- MULTIPLE CHAMBER DESIGN
- EASY ACCESS FOR SCHEDULED MAINTENANCE
- REMOVAL OF GROSS POLLUTANTS AND SEDIMENT DOWN TO 3MM
- STRONG FRP CONSTRUCTION WITH WEIGHT SAVING ADVANTAGE

The Enviroprotector is an innovative stormwater filtration system that is designed to handle high levels of pollution in busy traffic areas. Made from sturdy fiberglass, this filter is simple to install within new or existing chambers on the site. Its innovative up-flow design helps to minimize head drop, ensuring optimal performance. The stormwater is treated through multiple processes including sedimentation, filtration, adsorption, and precipitation to reduce heavy metals, total suspended solids, and excess nutrients. With its advanced design and efficient operation, the Enviroprotector is the perfect solution for managing stormwater pollution in areas with heavy traffic.



RESIDENTIAL SUBDIVISIONS

PRIMARY GROSS POLLUTANTS, OILS AND SEDIMENT

COMBINED SEWER OVERFLOWS

STORMWATER HARVESTING PROJECTS

COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

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XTREAMPROTECTOR

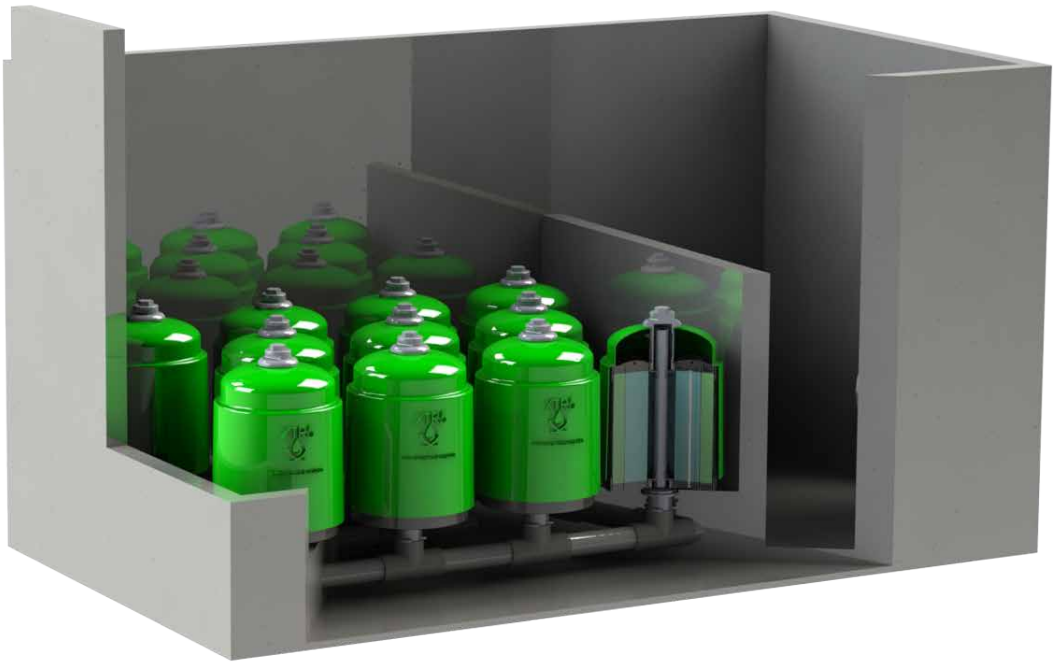
TERTIARY TREATMENT

The Xtreamprotector is one of protectors most efficient and complete tertiary treatment filters, removing high percentages of sedimentation, gross pollutants, hydrocarbons and oils, heavy metals, nutrients and organic substances and phosphorus. The process of this filter is simple, but extremely effective:

Firstly the water enters through the flame dip tube from the stormwater drain or previous stormwater treatment stage and into the Xtreamprotector housing, either an FRP tank, or concrete encasing.

A silt baffle is installed prior to the filters location, as well as the filters being positioned on a raised floor to prevent sediments from entering the filters. Once the water level is high enough the water enters through the inlet legs, rising evenly through the base. As the water level rises the outer riser channels fill covering the surface of the filter media. The stormwater then passes through a 2mm wire mesh, removing all contaminants larger than this mesh will allow. The water then flows through the three circular cylinder layers of filtration media, as shown by the orange, green and blue in the image below with each layer performing filtration of desired contaminants. Each media is separated by a 1mm wire mesh, providing further interception and sediment removal. The water then flows into the inner riser tube and into the top retention tank, and out of the central dropper tube.

- ROBUST FILTRATION.
- HIGH VOLUME CAPACITY.
- VERSATILE INSTALLATION OPTIONS.
- DURABLE AND LOW MAINTENANCE.
- REMOVAL OF FINE SEDIMENTS AND HEAVY METALS
- EFFECTIVE REMOVAL OF NUTRIENTS UP TO 72 L/S
- FRP AND CONCRETE CONSTRUCTION OPTIONS



RESIDENTIAL SUBDIVISIONS

PRIMARY GROSS POLLUTANTS, OILS AND SEDIMENT

COMBINED SEWER OVERFLOWS

STORMWATER HARVESTING PROJECTS

COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

MAIN STORMWATER DRAINAGE SYSTEMS

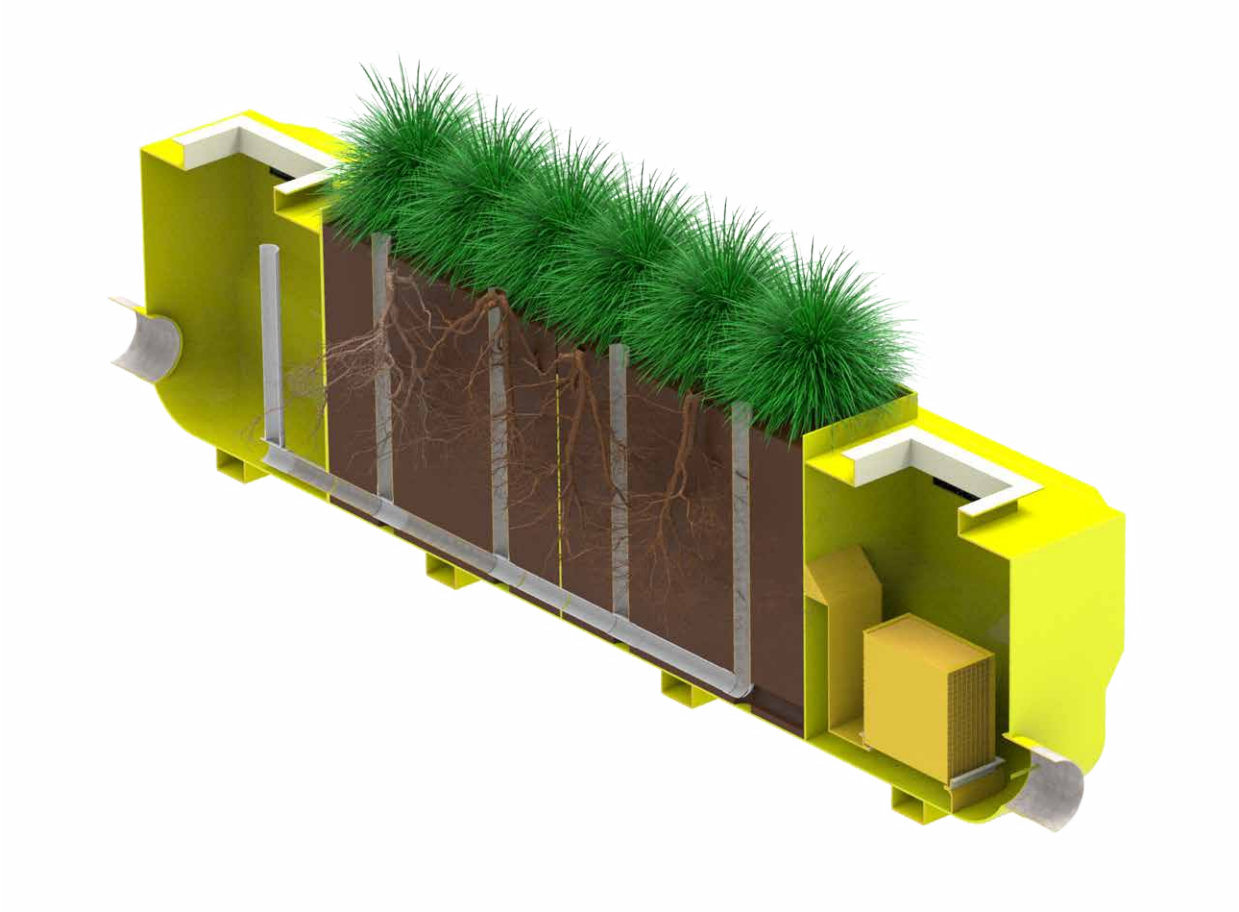
RETROFITTING TO EXISTING STORMWATER DRAINAGE SYSTEMS

BIOPROTECTOR

TERTIARY TREATMENT

- BIOLOGICAL TREATMENT PROCESS FOR EFFECTIVE WASTEWATER TREATMENT.
- COMPACT DESIGN FOR EASY AND FLEXIBLE INSTALLATION.
- DURABLE AND CORROSION-RESISTANT MATERIAL FOR LONG-LASTING PERFORMANCE.
- LOW MAINTENANCE REQUIREMENTS FOR REDUCED OPERATING COSTS.

The Bioprotector is designed to provide effective stormwater filtration by combining both physical and biological processes. Its unique design blends well into urban areas, making it an attractive and functional solution for managing stormwater pollution. The system is versatile and can be configured for a variety of settings, from residential to industrial. It is easy to install in new construction sites and can be retrofitted into existing urban areas. With its effective filtration and attractive design, the Bioprotector is a top choice for managing stormwater pollution in urban areas.



RESIDENTIAL SUBDIVISIONS

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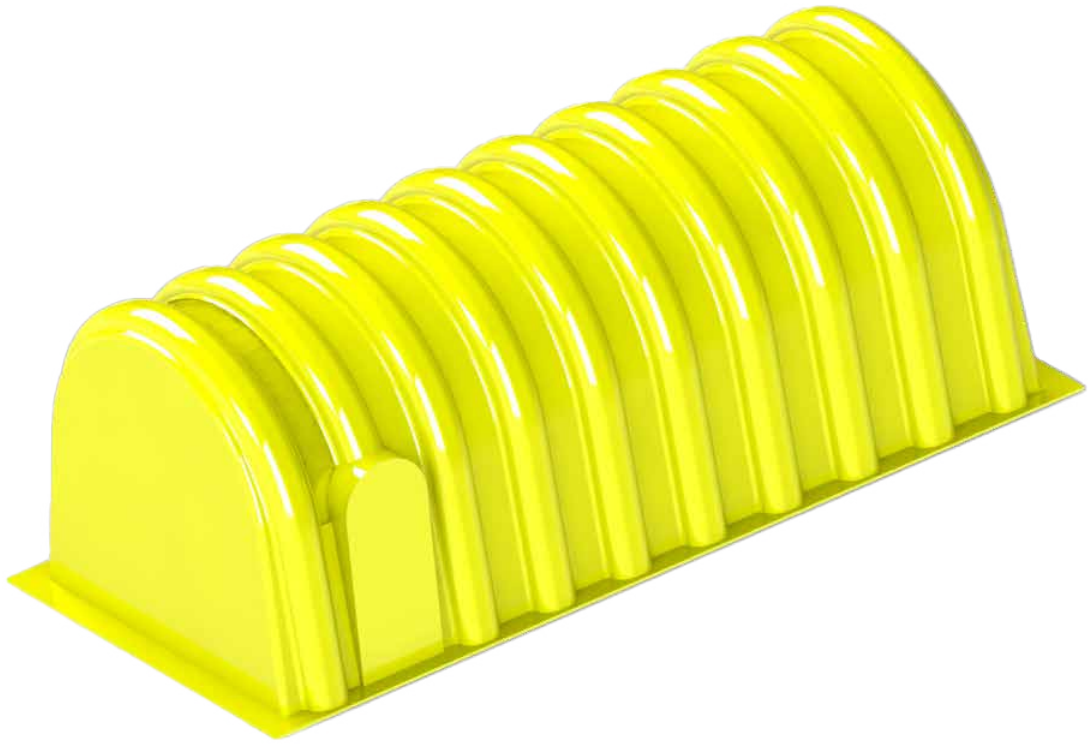
STORMBRAKE

STORAGE TREATMENT

The Stormbrake system is a cutting-edge solution developed by Protector that utilizes natural filtration processes for effective and environmentally friendly stormwater management. Unlike other systems, Stormbrake does not require any impermeable surfaces or concrete casting, relying solely on natural systems such as soil and compacted stone for filtration. The single FRP shell, open-bottomed design allows for easy installation and large arrangements, storing and filtering water simultaneously. By combining the natural filtration and biofiltration techniques of soil and compressed rocks, the system is able to remove nutrients, sedimentation, and attached particles from the water. Stormbrake is capable of recharging and decontaminating stormwater runoff ground water while also managing water flow and retaining water, making it an effective and efficient solution for stormwater treatment and management. With its low-impact design and ability to work with natural processes, the Stormbrake system is a unique and innovative solution for environmentally conscious organizations.

- FILTERS USING PHYSICAL AND BIOFILTRATION PROCESSES WHILST IN RETENTION
- ABLE TO BE BURIED IN SEVERAL LAYERS UP TO A DEPTH OF 10M
- REQUIRES NO CRANE LIFTING OR NEED FOR MECHANICAL LIFTING MACHINERY DUE TO LIGHTWEIGHT DESIGN
- HIGH LOAD CAPABILITIES
- MAINTAINS GROUNDWATER BASE FLOW TO STREAMS
- STRONG DOME FRP SHELL DESIGNED TO WITHSTAND DEPTH PRESSURE FROM SOIL FOR LONG LIFE USAGE



URBAN DEVELOPMENTS

COMMERCIAL ZONES

COUNCIL AND COMMERCIAL BUILDING SITS

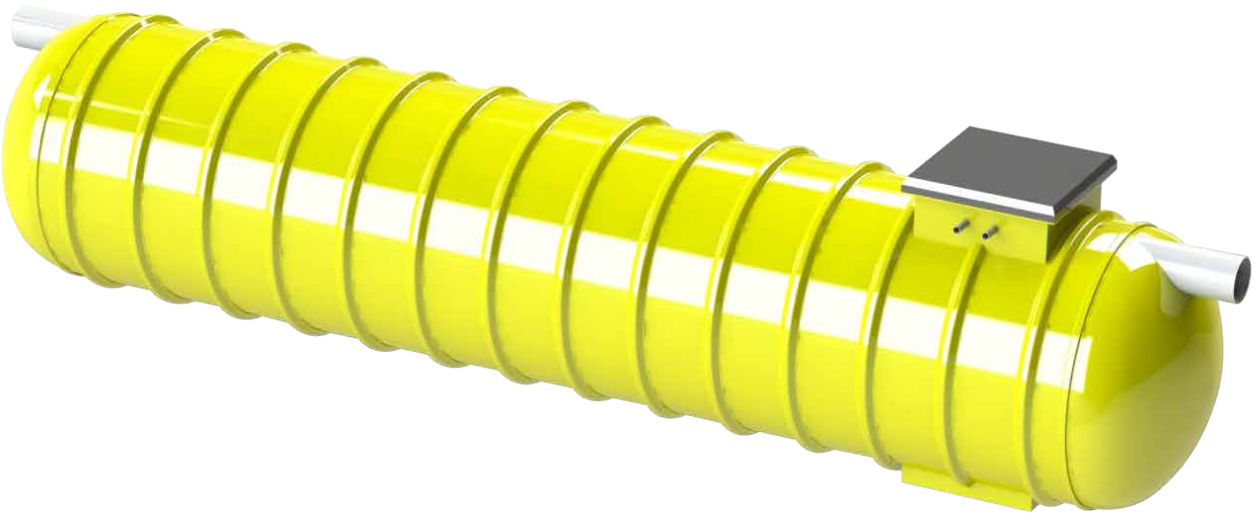
LIGHT POLLUTANT INDUSTRIAL ZONES

HORIZONTAL STORAGE SYSTEMS

- RELIABLE AND LONG-LASTING STORAGE SOLUTION
- CONSTRUCTED WITH FIBER REINFORCED POLYMERS FOR ADDED STRENGTH
- CORROSION-RESISTANT FOR LONGEVITY AND PERFORMANCE
- CAN BE EQUIPPED WITH BAFFLES, PUMPING STATIONS, AND PRESSURIZATION OPTIONS.

The Horizontal Storage Tank systems are designed to provide reliable and long-lasting storage solutions for various applications, including stormwater management. These tanks are made from fiber reinforced polymers (FRP) and are constructed using chop hoop filament wound techniques for added strength and durability. The tanks are also designed to be corrosion-resistant, ensuring their longevity and performance. Additionally, the horizontal retention tanks can be equipped with baffles, pumping stations, and pressurization options to meet specific needs. These systems are an effective solution for the storage, detention, and retention of water in stormwater management applications.

The Horizontal Storage Tank systems are highly capable storage systems made from fiber reinforced polymers, using proven chop hoop filament winding techniques for durability and longevity. The Horizontal Retention systems serve as the final stage of the treatment process, where water is stored, detained, and retained. The tanks can be fitted with various additions, including baffles, pumping stations, pressurization, and can be placed anywhere in the treatment process. These retention tanks provide a flexible and customizable solution to meet specific storage needs.



URBAN DEVELOPMENTS

COMMERCIAL ZONES

COUNCIL AND COMMERCIAL BUILDING SITS

LIGHT POLLUTANT INDUSTRIAL ZONES

WHY DO WE TREAT STORMWATER?

Stormwater runoff is a major global environmental concern caused by the increase of urbanization and the growth of cities. Urbanization reduces the land available for water infiltration, leading to more contaminated runoff entering waterways. This runoff contains pollutants like sediment, nutrients, heavy metals, and chemicals that can harm rivers, streams, and other waterways. In developed areas, stormwater runoff is usually channeled into waterways instead of being absorbed by soil or evaporating.

Effective stormwater treatment and management is crucial to protect the environment and provide social, economic, and communal benefits. This can be achieved through techniques such as gross pollutant traps to remove larger debris and sedimentation, and tertiary treatment systems to remove heavy metals, nutrients, and fine colloidal particles. Proper stormwater management can also reduce the risk of flooding, decrease the demand on public stormwater systems, support healthy streams, and create sustainable communities.

However, many communities still lack proper stormwater management due to a lack of funding, resources, and public awareness. Communities must work together with local governments, businesses, and organizations to secure funding and resources. This can also be achieved through increased public education and awareness about the importance of stormwater management.

In conclusion, stormwater treatment and management is essential for a healthy environment and sustainable communities. The benefits of effective stormwater management include reduced flooding, reduced demand on public systems, and healthier waterways. As cities continue to grow, it is crucial to invest in stormwater management systems to ensure a better future for our environment and communities. With proper funding, resources, and public awareness, we can ensure our waterways remain healthy for generations to come.

WHAT PROCESS IS BEST FOR REMOVING HYDROCARBONS FROM STORMWATER?

Stormwater runoff can contain a significant amount of pollutants, including hydrocarbons from fueling stations, cars, industrial processes, and other sources. If not treated properly, these pollutants can harm aquatic life and ecosystems. To remove hydrocarbons from stormwater, several effective methods exist, including physical and chemical treatments. These treatments aim to eliminate hydrocarbons from the water completely, ensuring a healthy and safe environment for aquatic life. Effective hydrocarbon removal is essential for maintaining the health of our water systems and preserving the balance of the ecosystem. There are several efficient processes of hydrocarbon removal:

GRAVITY SEPARATION

The removal of hydrocarbons from water involves using Stokes Law, which states that denser droplets (hydrocarbons) rise to the surface of a fluid (water) in a non-turbulent system, like a storage or retention tank.

COALESCENCE

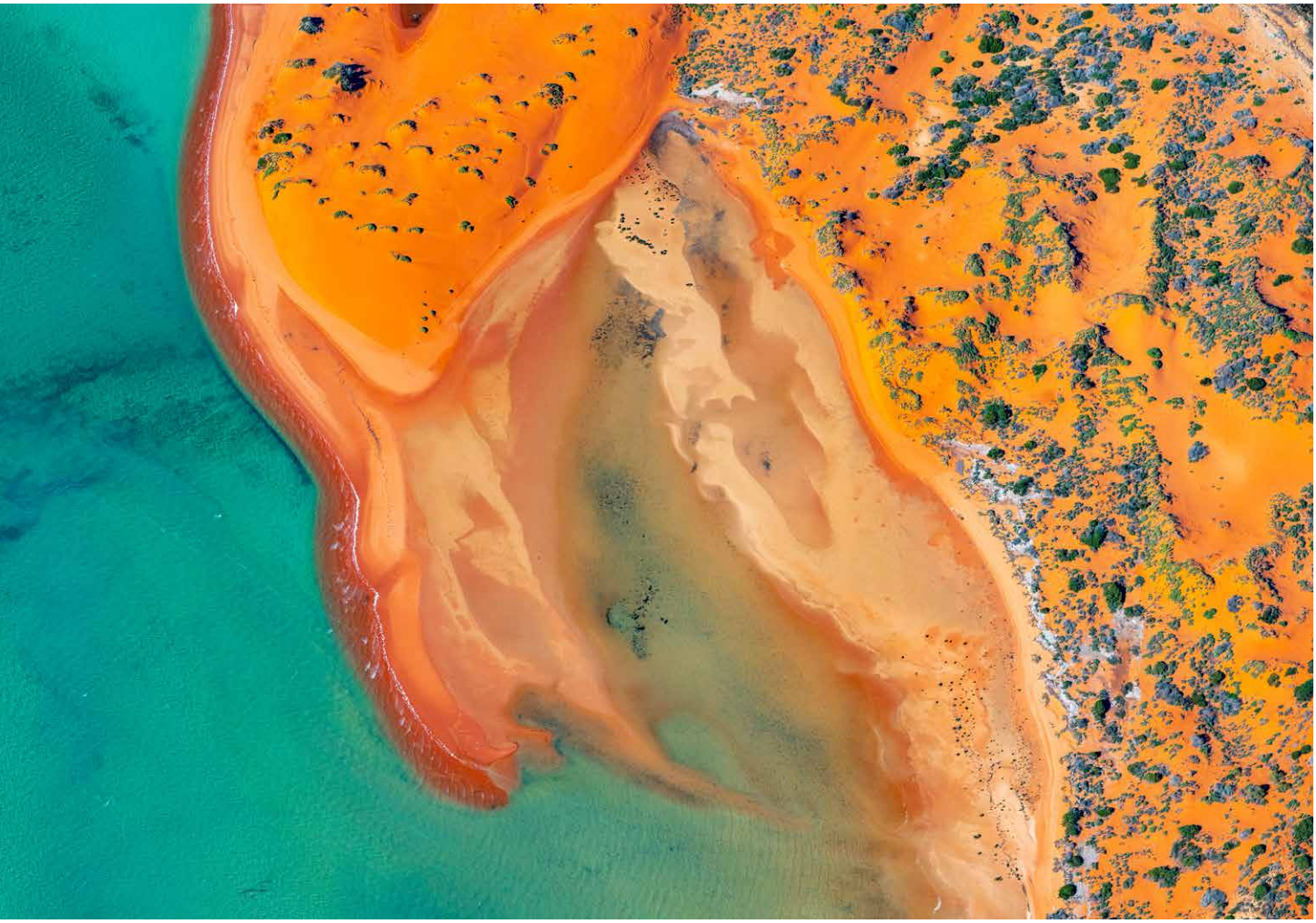
Coalescence in water treatment occurs when small oil droplets collide and form larger droplets due to low energy input. This makes it easier to remove the droplets from the water.

ADSORPTION

In water treatment, adhesion is the process where atoms, ions or molecules, such as hydrocarbons, stick to a surface and are removed from the flow of water. A combination of processes is typically used to effectively remove hydrocarbons from stormwater. When selecting the best process for a specific application, it's crucial to consider the types of contaminants present, as well as the environment. For example, carpark developments have high levels of oils, pollutants from foot traffic, and hydrocarbons from cars and rooftops, so these areas need comprehensive tertiary treatment systems that can remove these contaminants before discharge into the environment.

The processes best used for carparks as their applications include:

- Gross Pollutant traps
- Gravity separation
- Coalescence
- Adsorptions
- Attachment and interception
- Sedimentation
- Precipitation



HOW DO WE TREAT STORMWATER?

To effectively treat stormwater runoff from highways, a combination of processes is usually necessary. This may include primary treatment methods, such as sedimentation and sediment traps, to remove large particles and heavy metals. Secondary treatment methods, such as filtration, can then remove finer particles and any remaining pollutants. Tertiary treatment methods, such as biodegradation and adsorption, can further reduce contaminant levels and produce water that is safe for the environment. Retention systems may also be used to store and treat water during heavy rainfall events. The specific processes used will depend on the specific conditions of the site, such as the rainfall patterns and flow rates, and the types of contaminants present.

The processes which we recommend to be utilised in the removal of pollutants produced from highways include:

- Gross Pollutant traps
- Gravity separation
- Coalescence
- Adsorptions
- Attachment and interception
- Sedimentation

WHAT IS THE DIFFERENCE BETWEEN PHYSICAL FILTRATION AND BIODEGRADATION?

The process of physical filtration involves the mechanical removal of solids or fluids from a fluid by forcing the flow of the liquid through a medium with smaller perforations than the particles to be removed. Biodegradation is the decomposition of materials through biological means such as bacteria, fungi, and other microorganisms. In stormwater treatment, biodegradation can be effectively combined with soil as the soil's high absorbency allows water to be absorbed and contaminated by microorganisms living in the soil, leading to removal of contaminants. These microorganisms consume organic materials like hydrocarbons and nutrients, leading to an increase in their population and more efficient removal of contaminants.

WHAT MAKES A GOOD STORMWATER TREATMENT SYSTEM?

The construction of an effective and efficient stormwater treatment system requires careful consideration of the surrounding environment and its specifications. This includes physical locale, rainfall conditions, surrounding environment, catchment size, contaminant types, flow rate, and risk analysis. Based on these considerations, appropriate processes for removing contaminants can be selected and implemented as a single or a complex treatment train. Unnecessary systems should be avoided to ensure efficiency. It is essential to use only proven, well-tested processes for treatment, as there is always a need for continual improvement and research in stormwater treatment technologies.

WHY STORMWATER TREATMENT MATTERS

Oceanic ecosystems are facing serious threats from pollution and contamination. 80% of this pollution comes from land-based activities such as stormwater runoff. Plastic waste and toxic contaminants, such as heavy metals and hydrocarbons, harm marine life. 8 million tonnes of plastic enter oceans annually. We need to protect these ecosystems through effective stormwater treatment technologies. Our systems remove contaminants, such as plastic debris and pollutants, through processes like physical filtration and biodegradation. Gross pollutant traps and secondary filtration systems reduce oil contamination, while tertiary treatment systems remove heavy metals and bacteria.

Effective stormwater management not only protects the environment but also contributes to a more beautiful world. It reduces the possibility of flooding, promotes wildlife and plant growth, and improves our quality of life. In Australia, where the extinction rate is high, promoting water quality is crucial to preserving unique wildlife populations.

Making our world cleaner is important for a healthy environment. With a growing population, we produce over 50 million tonnes of waste each year in Australia, which often ends up in our environment through littering, dumping, and stormwater runoff. Effective stormwater solutions can reduce water pollution from cities and promote the growth of wildlife and plants. We need to take steps to reduce pollution and protect our environment from the growing trash island in the Pacific and other similar cases all over the world.

OUR PROCESS

Protector products are made using the chop hoop filament winding process which provides both circumferential and longitudinal strength. Each product features a smooth, corrosion-resistant inner layer and a water-resistant outer layer made of FRP, making them light, easy to handle and install. The internal finish helps prevent scum buildup and the product is resistant to corrosion and rust. Our experienced team has over 20 years of FRP manufacturing and design knowledge, ensuring high standards in every step of the production process. The filament winding process allows for tanks to be molded as single units, monitored with digital readouts, and tested for quality. Our products are engineered to handle tough environmental conditions and have been proven in high-water tables and volcanic soils.

SPECIFICATIONS

Throughout our design and manufacture of our various designs we have maintained all of the Australian standards required in out systems.

CONSTRUCTION STANDARDS

ASME RPT-1 Reinforced Thermoset Plastic Corrosion- Resistant Equipment

AS2634 - Chemical plant equipment made from glassfibre reinforced plastics

AS1546 - Underground tank design

AS1170 - Loading code

DESIGN METHODOLOGY

The underground tank Design Methodology is based on the use of the above standards as described, where applicable:

- **ASME RTP-1** is used to formulae the Design of the shell under external soil/ groundwater loading is based on design for external collapse.
- **AS2634** is used to formulae the design & manufacture and installation of the Penetrations to the stations
- **AS1546** is used to formulae the design load of soil/ groundwater, and use for the testing methods applied.
- **AS1170** is used to formulae the design loads from active loads that the stations are subject to, including the required roof slab design. This standard is also used to formulae the ballast requirements for anti-floatation.

CORROSION

INTERNAL

Internal Corrosion Barrier, moulded with a resin rich C'veil and CSM layers Resin rich Corrosion barrier constructed from Hetron 922 Vinyl Ester Resin C'veil will be Regina 80gsm Surface Tissue The Internal Corrosion Barrier is manufactured in accordance with AS2634

EXTERNAL

External layer will a resin rich CSM layer and C-Glass veil finished with ISO/NPG Flocoat layer for external finish to required colour

REINFORCEMENT

Manufactured using Chop / Hoop Construction, on a computer controlled Filament Winding machine. Shell Thickness are in accordance to the design requirements set out in the methodology. Structural layers are constructed from Polyplex Isophthalic Resin with CSM & Hoop in accordance with Ratio's as specified by the design. Fiberglass 'E' glass is used for both chopped and continuous strands.

TANK

The Pump Station Battered base is circumferentially benched to WSA04—2005 FRP Flanged fittings are made in accordance with AS2634, and flanges are installed as per AS2634. Both the internal and external FRP attachment laminates are in accordance with AS2634

DESIGN CONSIDERATIONS

The following treatment systems that PROTECTOR offer are suited to a wide range of sites and applications, ranging from parks and recreational areas, to residential systems, to airport tarmacs and to industrial sites.

Important considerations must be taken when deciding on which Protector product is suitable for your needs. With the assistance of our team of experienced staff we can offer endless assistance and advice in this matter. The most important aspects we consider to help solve your needs are:

- Physical Local and Rainfall Conditions
- Catchment Size
- Contaminant Types
- Flow Rate
- Risk Analysis

When all of these systems are considered our team at Protector will determine the best solution for you site demands.

APPLICATION SUITABILITY

APPLICATION	ECOPROTECTOR	STORMPROTECTOR	HYDROPROTECTOR	ENVIROPROTECTOR	MAXIPROTECTOR	BIOPROTECTOR	XTREAMPROTECTOR	STORMBRAKE	RETENTION SYSTEMS
Shopping precincts	•	•		•	•		•		
Commerical Zones	•	•		•	•	•	•	•	•
Recreational Areas	•								
Light Industrial Areas	•	•		•				•	•
Beaches and Parks	•							•	
Power Stations	•	•	•	•	•	•		•	•
Mining Areas	•	•	•	•				•	•
Service Stations	•	•	•					•	•
Re-fuelling Areas	•	•	•				•	•	•
Car Parks	•	•		•	•	•	•	•	•
Depots	•	•		•	•	•	•	•	•
Heavy Industrial Areas		•		•	•	•	•	•	•
Tunnels		•		•	•		•	•	•
Highways and Intersections		•		•	•		•	•	•
Airports and Tarmacs		•		•	•		•	•	•
High Heavy Metal Run offs		•		•	•	•		•	•
Vehicle Maintenance Areas		•	•	•	•	•	•	•	•

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PROTECTOR
SAVING NATURE.