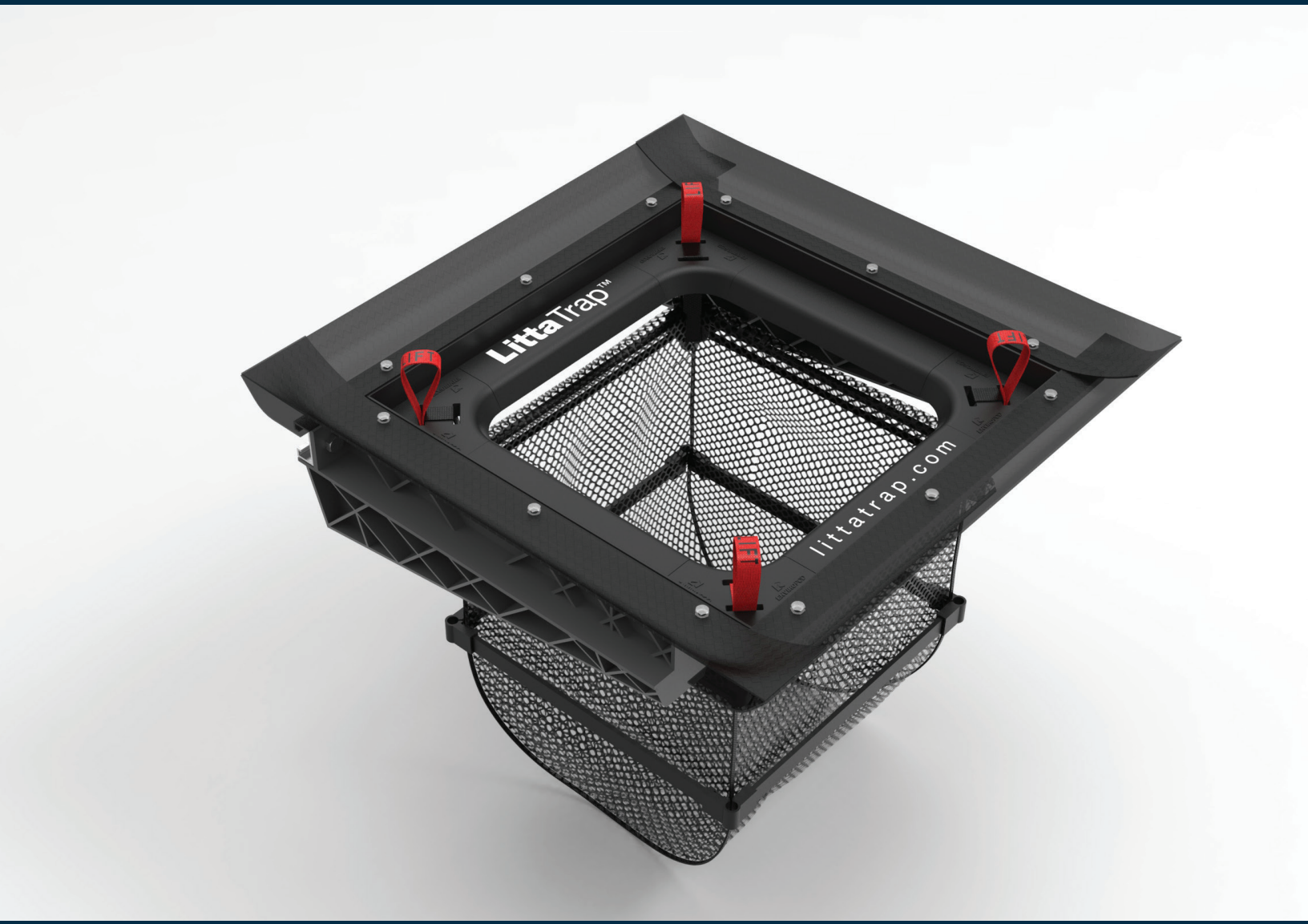


LittaTrap™
Technical Guide

imbrium®

LittaTrap™

The LittaTrap is an innovative catch basin insert designed to be easily retrofitted into new and existing stormwater catch basins to specifically target litter, plastic and gross pollutants over 5 mm.

In addition, the LittaTrap has patented flow dampening components that dissipate energy, promote Total Suspended Solids (TSS) capture in sumped catch basins, and provide the full capture of gross solids. The novel design maintains catch basin hydraulic conductivity and allows easy maintenance when completely full of trash and debris.

The patented batten basket configuration gives the LittaTrap a high screen area and storage volume, allowing the system to have a high hydraulic conductivity through its service life. The basket also allows the system to be easily removed in times of maintenance. As the system is on-line, the basket and overflow design provides an unimpeded secondary flow path. This ensures the system does not compromise the hydraulic capacity of the catch basin it is installed into.

Standard catch basins are prone to resuspension and washout of previously captured sediment during moderate-intensity and high-intensity storm events. By retrofitting existing sumped catch basins with LittaTrap, sediment capture and retention can be greatly enhanced.

The system is easy to install and safe to maintain, with large storage volume relative to its catchment area.

Confined space entry is not required to maintain this stormwater treatment device.

COMPONENTS AND OPERATION

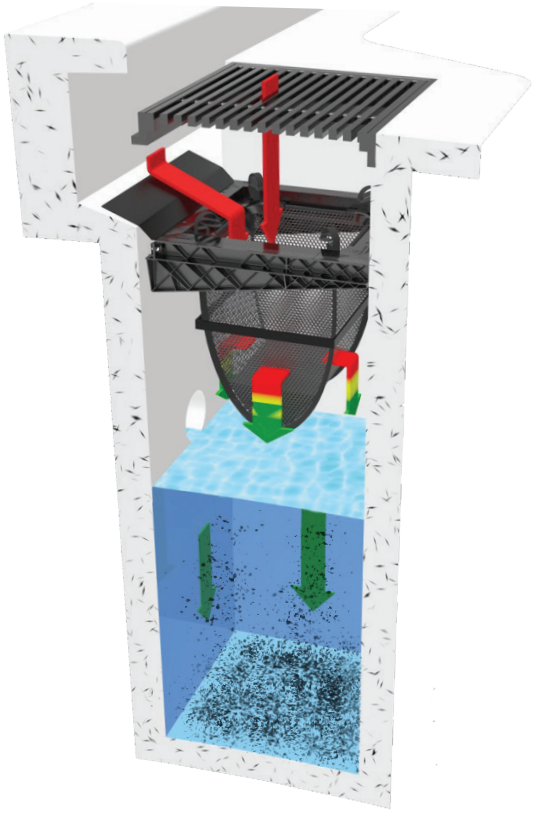
The LittaTrap consists of a Support System, Plastic Seals, Flow Diverter, Energy Dissipator, Basket and Adjustable Bypass. All components are made of high-durability materials.

Three treatment processes are employed when the LittaTrap is installed inside a sumped catch basin:

1. **Screening** for capture of gross pollutants
2. **Flow distribution** to enhance sediment capture
3. **Energy dissipation** to minimize sediment resuspension and washout

Flow enters the catch basin through a grate, curb inlet, or both. Downward flow is intercepted and redirected in multiple directions by the basket's patented energy dissipating design. Flow distribution is improved and sump turbulence is greatly reduced, serving to increase sediment capture, while minimizing sediment resuspension during higher intensity storm events.

Gross solids are dewatered and retained in the basket above the static water elevation, which inhibits the breakdown and release of nutrients and other contaminants.



FEATURES	BENEFITS
Strong, lightweight, patented batten basket design	Complete capture of gross pollutants Basket resists tearing or deformation when full Easy cleaning of basket by hand or vacuum
Flow distribution and energy dissipation	Enhanced sediment capture and retention
Storage of dewatered gross pollutants	Superior nutrient capture
Sensible, durable design	Simple installation, long-lasting performance
Adjustable, high flow rate bypass	Maintains system hydraulic capacity
High capacity pollutant storage	Reduced maintenance frequency

Performance

The LittaTrap enhances the pollutant removal and retention of a standard catch basin. This was evaluated by a series of lab tests performed at Good Harbour Laboratories, Toronto, Canada.[1]

Gross pollutant removal, TSS removal, and sediment resuspension were evaluated for a LittaTrap enhanced catch basin and compared to a control catch basin without the LittaTrap.

The performance evaluation was based on a combination of Canadian Environmental Technology Verification Program (ETV), New Jersey Department of Environmental Protection (NJDEP) test protocols and California Department of Transportation (CALTRANS) performance evaluation protocols.

SEDIMENT REMOVAL AND FLOW RATE

The LittaTrap increases the sediment removal of the control catch basin from 20% to 50% at flow rate of 3.5 l/sec.

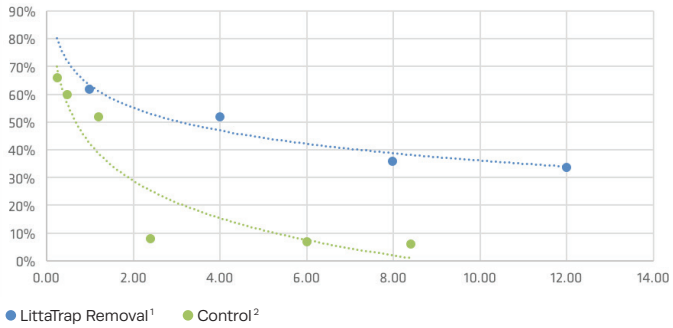
LittaTrap Gross Pollutant Test Results

Flow Rate (l/sec)	Mass of Escaped Solids (g)	Estimated Gross Solids Capture Efficiency (%)
5	0.0275	100 [i]
10	0.1546	99.9 [i]
15[ii]	1.47	99.2 [i]

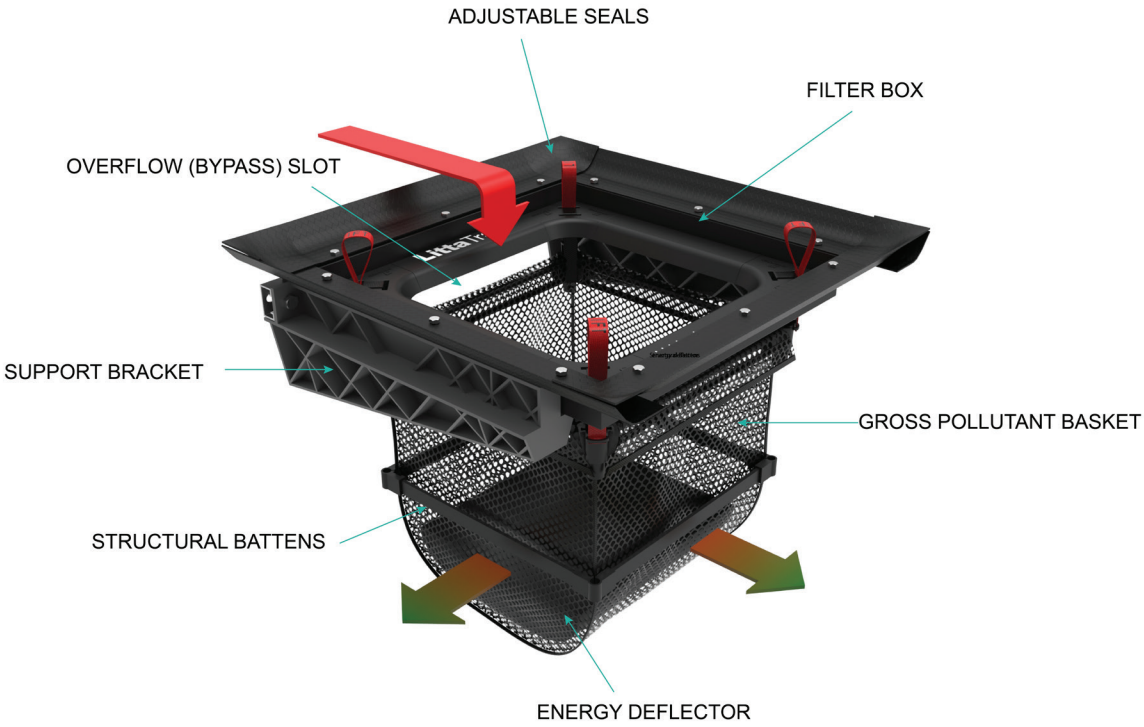
Table 1: LittaTrap Gross Pollutant Test Results

i. Based on an added mass of 193g
ii. Flow held for 55 min. following the addition of solids

LittaTrap Vs Control Catch Basin Sediment Removal



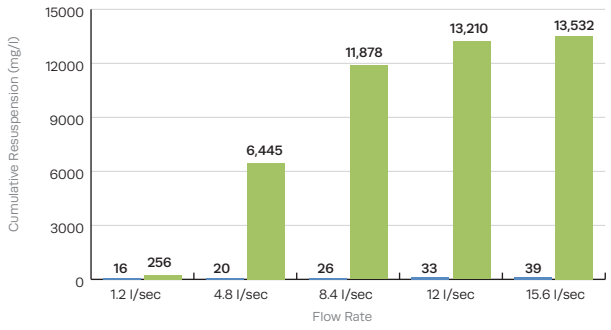
Graph 1: Comparative removal efficiency of a LittaTrap enhanced catch basin and a control catch basin.



SCOUR TESTING

As the LittaTrap is an online treatment device, it is important to evaluate scour. Graph 2 below compares the TSS resuspension of LittaTrap enhanced catch basin with a control. The LittaTrap almost eliminates resuspension of captured sediment in the catch basin.

Resuspension Testing



Graph 2: Scour testing results

Standard catch basin and a catch basin enhanced with LittaTrap. There is much less turbulence in the sump below the LittaTrap.

HYDRAULIC SPECIFICATION AND STANDARD MODELS

The table below details the nominal dimensions and hydraulic capabilities of the standard LittaTrap models.

Other models are available on request, including adapter kits for round catch basins. For more information and drawings, please contact info@imbriumsystems.com.

LittaTrap is typically sized to treat a minimum 90% of the average annual runoff.

LittaTrap Model	Nominal Catch Basin Internal Dimensions				Treatment Flow Rate for Sediment Removal[1]		Treatment Flow Rate for Gross Pollutants[2]		Max Bypass Flow Rate	
	Length		Width		L/sec	GPM	L/sec	GPM	L/sec	GPM
	ft	mm	ft	mm						
LT3030	1	300	1	300	1.2	19	3.8	60	20.0	317
LT4545	1.5	450	1.5	450	2.7	43	8.4	133	45.0	713
LT6745	2.1	675	1.5	450	4.1	65	12.7	201	61.0	967
LT6060	2	600	2	600	4.8	76	15.0	238	67.0	1062
LT6090	2	600	3	900	7.2	114	22.5	357	103.0	1633
LT9090	3	900	3	900	10.8	171	33.8	536	129.0	2045

LittaTrap models are adjustable in size. Please contact Imbrium Systems for more information on tolerances for each model.

1 Based on Surface Loading Rate of 800 L/min/m2 and minimum average annual removal of 50% of the CA ETV PSD

2 Based on Surface Loading Rate of 2500 L/min/m2 and minimum average annual removal of 99% of gross pollutants 5mm and larger

Operation

HEALTH AND SAFETY

We recommend checking your local regulations for a Site-Specific Safety Plan before undertaking any installation or maintenance. Personal Protection Equipment (PPE) is required when installing or maintaining a LittaTrap. This will mean gloves, long sleeves, long pants, Hi-Viz clothing and closed shoes.

For additional advice on the relevant Health and Safety requirements, we recommend that you consult your local Heath and Safety regulator.

INSTALLATION

Installing a LittaTrap is a simple process that takes approximately 15 minutes per catch basin.

See www.imbriumsystems.com/littatrap for instructional guides.

MAINTENANCE

All treatment devices require maintenance to remove trapped contaminants and to minimize bypass. Due to the variable nature of stormwater pollution and localized site pollutant loadings, maintenance frequencies vary for different sites and different rainfall characteristics.

It is recommended to inspect the LittaTrap frequently over the first few years of operation to determine seasonal and annual maintenance requirements.

LittaTrap maintenance involves two activities. These are as follows:

1. Routine removal and emptying of the gross pollutant basket; and
2. Periodic vacuum of oils and sediment from the catch basin sump.

LITTATRAP BASKET MAINTENANCE

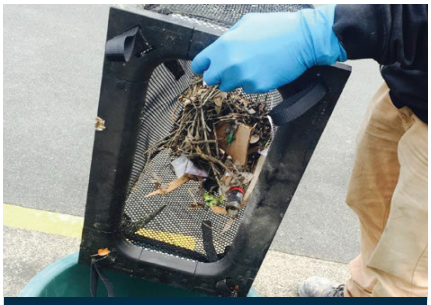
It is recommended that the LittaTrap basket be emptied when 85% full. At this level, the basket can still convey 15 l/sec @ 99% gross solid removal.

To empty the LittaTrap basket, it is a simple one minute exercise "Lift Tip Replace".

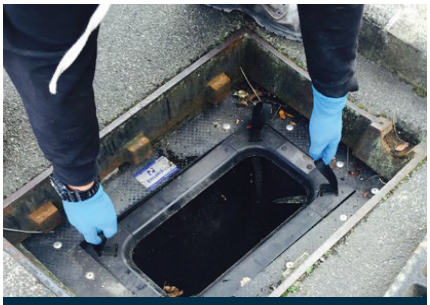
3. Establish a safe working area per typical catch basin service activity.
4. Remove grate / access cover.
5. Remove the basket with two lifting hooks or lift by hand through the loops on the top of the basket. Excess debris should be scooped out first if the basket is over half full.
6. Pour contents of the basket into a disposal container.
7. Replace basket and grate.

The LittaTrap basket maintenance is typically required 1 or 2 times a year, however it is dependent on the catchments' pollutant loading.

1 Lift



2 Tip



3 Replace

Maintenance of the LittaTrap basket is a simple one minute exercise 'Lift Tip Replace.'

Vacuum eduction of LittaTrap sump

CATCH BASIN SUMP MAINTENANCE

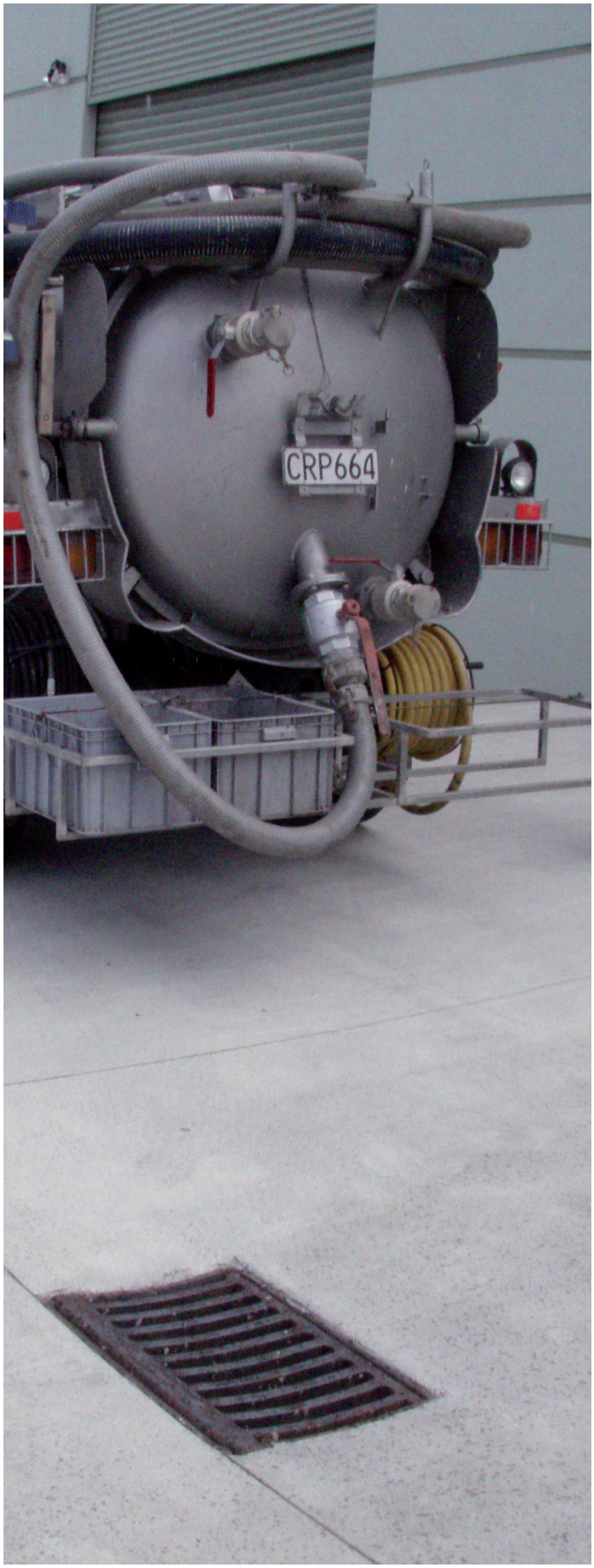
It is recommended that the sump of the catch basin installed with a LittaTrap be vacuum cleaned when the sediment in the sump is 50 mm below the outlet.

The sump of the catch basin is easily accessed by removing the basket. Conventional catch basin cleaning equipment can be used.

It is anticipated that sump maintenance will be between 1 – 3 years depending on catch basin sump depth and pollutant loading.

The steps for vacuum maintenance are detailed below:

1. Establish a safe working area per typical catchpit service activity.
2. Remove grate / access cover.
3. Vacuum accumulated debris from the basket and remove.
4. Remove and inspect the oil absorbent pouches (if applicable).
5. Vacuum contents from sump.
6. Re-install oil absorbent pouches (if applicable).
7. Replace basket and grate.



Applications

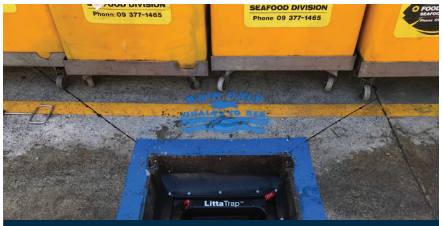
Pretreatment

Manufacturing

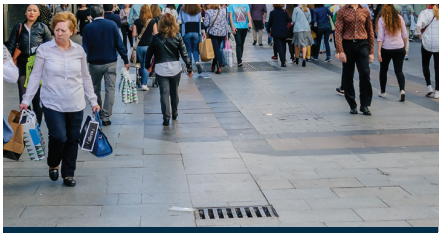
Retail

Industrial

Smoking Areas



Food Processing



Pedestrian Areas

City Streets

Car Parks