

FACT SHEET OVERVIEW

LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES



ABOUT THE FACT SHEETS

This fact sheet series has been prepared as a quick reference resource for councils on a range of litter bin infrastructure for public places.

Fact sheet content has been collated from review of publicly available and published information, as well as case study data and anecdotal evidence sourced from equipment suppliers and councils.

No guarantee can be provided as to the accuracy of the content past the published date. Equipment suppliers should be consulted for further information.

GUIDELINE RATINGS

Ratings for each litter bin infrastructure type have been allocated according to a defined set of assessment criteria in order to compare the relative attributes of each (where possible). An explanation of each rating and a score guide for each of the assessment criteria is provided below. Ratings are allocated as a score out of five. Ratings are subjective and should be used as a guide only.

Criteria	Sub-criteria	Symbol	Explanation of Rating	Score Guide (Score of 5 = best outcome)
Cost	Capex (purchase & install)	★	The capital cost to purchase and install the infrastructure	<ul style="list-style-type: none"> 1 = the most expensive (e.g. thousands of dollars) 5 = the least expensive (e.g. tens of dollars)
	Opex (emptying bins)	★	The operational cost to service the infrastructure	<ul style="list-style-type: none"> 1 = the most resource intensive 5 = the least resource intensive
Amenity	Visual appeal	★	The general aesthetics of the infrastructure	<ul style="list-style-type: none"> 1 = dominates the surrounding environment 5 = fits well into the surrounding environment
	Ease and safety of use	★	How safe and convenient the infrastructure is to use	<ul style="list-style-type: none"> 1 = unsafe and/or inaccessible to the public 5 = very safe and/or accessible to the public
	Cleanliness (litter & pest control)	★	The ability of the infrastructure to prevent overfilling, vandalism, access by pests, and consequently windblown litter	<ul style="list-style-type: none"> 1 = high potential for windblown litter 5 = limited or no potential for windblown litter
Servicing	Ease of installation	★	The extent of planning and approvals required, and the associated timeframe for installation	<ul style="list-style-type: none"> 1 = likely to face multiple barriers to install 5 = straight forward to install
	Maintenance and cleaning	★	How easy the infrastructure is to maintain	<ul style="list-style-type: none"> 1 = requires extensive maintenance or difficult to maintain 5 = needs limited maintenance or simple to maintain
	Accessibility for collections	★	The constraints associated with collecting and emptying the infrastructure, and the mobile nature of the infrastructure	<ul style="list-style-type: none"> 1 = extensive planning for servicing required 5 = limited need to plan for servicing
	Capacity	★	The storage capacity of the infrastructure and how flexible it is to fluctuations in waste volumes	<ul style="list-style-type: none"> 1 = limited or constrained capacity 5 = unlimited or significant capacity
Sustainability	Multi-stream option available	★	The availability of recycling openings, and the ease of co-locating multi-stream disposal points for segregation of recycling	<ul style="list-style-type: none"> 1 = recycling options limited or difficult to co-locate 5 = recycling options available and easy to co-locate

Note: 'n/a' = not available or not suitable for comparison. Check fact sheets for all corresponding information used to allocate a guideline rating.

Small Litter Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Small litter bins (also referred to as “cradle bins”) have an approximate capacity of 80 litres or less and have traditionally been used in plazas, malls, parks and CBD areas for waste collection. The bins are popular as they are simple, robust and provide a cheaper alternative to other litter infrastructure types. Small litter bins generally comprise of a body casing, liner, base and a rim lid with a disposal opening or a winged roof.

Timber Batten, Rim Lid Bin in Shopping Plaza

Source: Street Furniture Australia

Technical Information

- Typically have a capacity of 80 litres or less
- Frame is constructed from aluminium or galvanised steel
- New bin types generally have a rim lid constructed from stainless steel or polished aluminium
- Winged roof bins are also available to shed rainwater and deter birds
- A range of body surrounds and liners are available including wood battens, galvanised metal and aluminium (with a range of powder coated colours and finishes)
- Drilled base possible for water drainage
- Typically have a key-operated sprung lid for access to the internal bag or bin, with galvanised fittings
- Can be free-standing or mounted to the ground
- Base options include saucer base (secured to a surface or freestanding), hoop base (secured to a surface) or hoop base (secured under a surface)
- Custom designs and integrated ash tray optional
- Typically only provided for the collection of single stream wastes (i.e. garbage) however co-location of bins is possible
- Indicative dimensions (in millimeters) for 80 litre rim lid bins range from 450 to 570 (diameter) x 660 to 840 (height).

Suitable Locations

Best suited to indoor public place areas experiencing predictable or limited pedestrian traffic, where usage patterns are known and bins are easily monitored to check for bin fullness. If placed outdoors, these bins should include a winged roof or be located in areas which do not experience high rainfall, wind impacts, illegal dumping or scavenging birds and animals.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

Small Litter Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

In 2014, **Lismore City Council** replaced a number of old litter bins, including small (rim lid, timber batten) litter bins, with more visible recycling stations throughout Heritage Park. This upgrade resulted in a cleaner park with clean, uniform bin enclosures and a 49% reduction in litter.

Small stainless steel litter bins were installed along the Avarua town strip in **Rarotonga, Cook Islands**. Over the years, these bins became too small to contain the waste volumes generated by an increasingly large number of tourists visiting the island each year. The small bins needed emptying several times a day to prevent overflowing bins. In 2016, the bins were replaced with larger recycling bin stations. The new bins have provided greater capacity to hold rubbish, promote recycling and have reduced bin emptying requirements.



Source: Street Furniture Australia

Small Litter Bin with Winged Roof

Strengths

- Robust, easy to clean and maintain, and inexpensive relative to other litter bin types
- Custom designs and a range of body surrounds are available to suit the amenity preferences for an area
- Accessible to children and people in wheelchairs
- Removes the need to touch the bins when disposing of litter
- Spare parts are readily available
- Easy to install, can be secured to the ground and key-secured to prevent public access to the internal bin.

Weaknesses

- Keyed access to the enclosure increases servicing time compared to MGBs
- Manual handling required (i.e. lifting and carrying of internal bag or bin) during servicing
- Bin surrounds are not generally available for commercialised and/or educational messaging
- Small litter bins with wide disposal openings and no covers have previously been used in busy outdoor locations. This has contributed to overflowing waste from bins and access to bin contents by scavenging birds.
- Recycling options and colour coding, to differentiate recycling bins from garbage bins, is generally not available.

Litter Bin Enclosures

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Litter bin enclosures (also known as “surrounds”) provide an encasement for internal bins that can be custom designed to suit different site characteristics and preferences in design. A large number of different styles are available and in use around Australia. Litter bin enclosures are popular with councils and land owners, and enclosures housing 120 litre mobile garbage bins (MGBs) are most commonly used.



Enclosure with Butt Bin installed in Brisbane

Technical Information

- The frame of the enclosure is made from stainless steel or aluminium
- Side panel materials are available in a range of materials including stainless and galvanised steel, aluminium, timber, composites, transparent plastic, laminates or toughened frosted glass
- Enclosures can be powder coated to provide a solid coloured finish
- Enclosures typically house between 120 litre and 240 litre internal MGBs. Enclosures for 360 litre MGBs are also available
- Can be set up as bin stations to collect dual or triple waste streams, with a range of chute and recycling openings
- Options include enclosed covers, curved and sloped covers, or no cover
- Custom designs and panels are typically available
- May be bolted into a concrete surface or provided with adjustable footings
- Access to internal bin is secured using keyed access, turn-key or slam latch
- Fasteners should be checked every 6 months and enclosures cleaned regularly (i.e. daily, weekly)
- Typical dimensions (in millimetres) for an enclosure with a cover housing a 120 litre bin are about (650 to 750) x (650 to 750) x (1200 to 1450) (w x d x h).

Suitable Locations

Best suited to public place areas where a stationary litter bin is possible or required, and council wishes to maintain a high level of visual amenity (i.e. CBD areas and recreational parks). Litter bin enclosures are typically located in areas where there have been incidences of vandalism to existing infrastructure, illegal dumping of commercial and/or residential waste, or birds and animals scavenging through open topped litter bins for food scraps.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

This project is a NSW EPA Waste Less, Recycle
More initiative funded from the waste levy.



Design Considerations

The functionality of a litter bin enclosure depends on a wide range of factors including:

- ease of installation, servicing and maintenance
- security provisions
- restricted access to deter illegal dumping and access by birds and animals
- type of materials used and how this relates to the potential for damage or vandalism
- additional parts availability
- custom panel designs for promotional or educational purposes
- provision of different openings and recycling options
- other design features that encourage diversion of waste from landfill.



Enclosure Profile including Ash Tray

Litter Bin Enclosures – Key Features

Key Features	Rationale
Cover / no cover	Without a cover, enclosures located outdoors are not as well protected from rain, wind, birds and animals. A cover acts as a deterrent against illegal dumping of wastes into the litter bin.
Flat cover / curved or sloped cover	A curved or sloped cover acts as a deterrent for people leaving litter on the cover.
Access from all sides / access on one side only (due to enclosed cover and one opening)	Litter can be disposed of from all approaches for the public's convenience. However, appropriate signage and/or colour coding is required to ensure use of the correct bin when part of a recycling station. Access from one side provides a restricted access for waste disposal and helps to focus the public's attention to recycling bins. It can also act as a deterrent for illegal dumping. Cover should be designed with slightly curved corners to prevent eye injuries.
Restricted opening / wide opening	A restricted opening acts as a deterrent for illegal dumping of residential, commercial and industrial wastes. 'Smart' openings are shaped to suit the specific recyclable containers and/or paper/newspaper inputs to prompt the public to recycle appropriately.
Adjustable footings / bolted down or built in	Enclosures needing to be located on sloped ground will require adjustable footings, whereas some enclosures may need to be adequately secured or bolted into a concrete surface.
Internal bin may be accessed from all sides / one side only	One side access means only one side is required to be hinged to support ongoing use. Providing access from all side panels of the enclosure adds convenience during siting, placement and collections (i.e. no concerns during siting with regard to access requirements).
Accessible to all users	Enclosures designed to comply with the intent of the Disability Discrimination Act and are accessible by people in wheelchairs.
Modular design	Replacement of parts can be undertaken in stages, and designs can be adapted (i.e. a damaged panel can be replaced without the need to purchase a whole new enclosure).
Fire resistant	Enclosures made from fire resistant materials. Enclosures which are built to restrict air flow into the enclosure in case the internal MGB is lit on fire.
Perforated panels	Perforated enclosure panels can act as a graffiti deterrent.
Snug-fitting internal bin	Prevents litter items falling outside the internal bin within the enclosure.



Images clockwise from left to right: 1. City of Ryde Council enclosure with recycling rosette (City of Ryde Council), 2. Dual Litter Bin Enclosure Installed at Port Stephens (Source Separation Systems), 3. Enclosures installed at Macquarie Mall in Liverpool (Liverpool City Council), 4. Taree's multi-stream enclosures with curved covers and coloured chutes (Source Separation Systems), 5. Recycling station with restricted opening (Gossi), 6. Liverpool City Council custom designed enclosure (Liverpool City Council).

Material Selection Options

- Timber:** generally considered to be the most aesthetically pleasing material. Stained timber requires recoating every 6 to 12 months to prevent splitting, cracking, or warping. Timber leaching may also occur which can stain the concrete base.
- Recycled plastic and wood-plastic composites:** available in a range of colours and surface finishes, and does not require ongoing maintenance. The material may be flammable (will smoulder or be damaged by heat, may continue to burn if there is an accelerant). Fire resistant composites are available. Check compliance with Australian Standards.
- Aluminium:** very low maintenance material and a good reflector of radiated heat. Abrasive materials will mark the surface and the material is easier to scratch than stainless steel. The material is also more prone to being dented than steel (i.e. if contacted by a car while parking). Anodising aluminium is used to produce a durable and decorative visual finish. The coating is weather resistant and is harder than powder coatings. It should be cleaned every 3 to 6 months to prevent premature coating deterioration.
- Stainless steel:** very low maintenance material and longer lasting than other materials (i.e. resists weather impacts). Stronger than galvanised steel. Light scratches do not lead to rusting and can be polished out, and graffiti can be easily removed. The smoother the surface of the stainless steel used, the more resistant it will be to weather impacts. 'Tea staining' (rust coloured stains) can occur when rough finishes are utilised, particularly in corrosive environments, but this will not impact the structural integrity of the material.
- Galvanised steel:** coated with layer of zinc to protect the steel from corroding. Not as strong as stainless steel and when surface is scratched, rusting starts to occur around the scratched area. Surface takes on matt grey finish which may not be aesthetically pleasing.
- Powder coating (all metals):** needs to be cleaned every 3 to 6 months but can be long lasting. Abrasive materials will mark the surface. If surface is broken, it must be lightly sanded and touched up with paint as soon as possible. If graffiti needs to be cleaned off on a regular basis, the material can start to look worn.

Litter Bin Enclosures

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

Litter bin enclosures have been implemented by many councils across Australia. They have also been installed by universities and around popular tourist areas such as Circular Quay and Barangaroo.

Penrith City Council identified high levels of litter at Glenmore Park, a large open space with sports and playground facilities. The site is used as a thoroughfare and is located nearby a school, a shopping centre and fast food premises. Ongoing vandalism of portable bins provided for sporting activities was an ongoing issue and so permanent bins were not provided at the park for casual park users. To address these issues, Council installed 4 vandal-resistant litter bin enclosures at key activity areas to secure portable bins outside sport activity times. Tailored 'Hey Tosser' campaign materials were used to generate awareness of the new bins and litter reduction initiatives. Litter counts conducted showed a 77% reduction in levels of litter along the footpath and a 48% reduction in litter in the playground area.



Source: Jacobs / Blacktown City Council

Enclosure with Multiple Openings and Butt Bin

Strengths

- Custom designs and recycling options are available and can be modified to suit the amenity and education preferences for an area
- Generally accessible to people in wheelchairs
- Removes the need to touch bin when disposing of litter
- Provision of restricted openings relative to traditional bins can act as a deterrent against illegal dumping or access by birds and animals
- Litter bin enclosures are built to house mobile garbage bins which are compatible with existing collection systems
- Enclosures generally enable repair of parts rather than replacement of whole bins
- Panelling of enclosure can be commercialised and/or used for educational messaging
- Enclosures can be secured by a key or locking mechanism to prevent public access to the internal bin.

Weaknesses

- Enclosures must be snug-fitting with internal bins to prevent litter falling between the internal bin and the enclosure
- Keyed access to the enclosure increases servicing time compared to MGBs
- Reflective surfaces are likely to require regular cleaning to ensure enclosures remain aesthetically pleasing to the public
- Different designs and materials are suitable for different applications which must be understood to ensure value for money, ease of maintenance and effective promotion of recycling.

This project is a NSW EPA Waste Less, Recycle More initiative funded from the waste levy.

Mobile Garbage Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Mobile garbage bins or MGBs (also known as “wheelie bins”) enable automated lifting by waste collection vehicles and are easy to manoeuvre reducing the potential for occupational hazards associated with lifting heavy bins. They come in a range of sizes and are heavily utilised for waste and recycling management across municipal, commercial and industrial sectors. For public places the 120 litre and 240 litre sized bins are typically installed.



Source: Jacobs / North Sydney Council

MGBs with Bin Caps at Kirribilli Markets, North Sydney

Technical Information

- MGB types range from 80 to 360 litres
- 120 litre and 240 litre bins are designed to hold 48 and 96 kilograms respectively
- Made with UV resistant materials and durable in Australian weather conditions
- Must be compliant with the Australian Standard for mobile bins
- Coloured lids are available for signalling collection of different waste streams
- Bin lids with central rosette openings made of flexible rubber allow the public to insert recyclable beverage containers while preventing birds and pests from accessing the bin
- Bin caps/hoods are a raised and highly visible coloured lid for bins that provide limited need for the public to touch the bin during waste disposal
- Can be secured using a single or double bin post, or a stand and wall bracket with a lock mechanism allowing for quick bin changes during servicing
- Various lid locking devices are available
- Optional signage or stickers can be placed on each side panel of the bin
- Warranty period of about 1 year
- Indicative dimensions (in millimetres) for a 120 litre to 240 litre mobile garbage bin are (485 to 585) x (560 to 730) x (940 to 1080) (w x d x h).

Suitable Locations

Best suited for temporary uses where permanent litter bins may not be appropriate, such as at events and venues experiencing high fluctuations in visitor numbers, and at sites where bins need to be wheeled to collection points. MGBs are commonly used within litter bin enclosures as they are mobile and can be lifted by waste collection vehicles for emptying.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

Mobile Garbage Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

In the **Great Lakes region**, 240 litre mobile garbage bins installed in public places, parks and along streets were being burnt out regularly by vandals at considerable replacement costs to Council. Fire resistant metal bins were trialled and subsequently used as an alternative system. In other locations where burning of mobile garbage bins is common, fireproof bin enclosures, which restrict airflow of oxygen to fires ignited within the bin, have been successfully utilised.

Kirribilli Markets has implemented a co-mingled recycling scheme. MGBs are placed in effective locations for public use (i.e. nearby footpaths and eating areas), and colour coded bin caps are used to differentiate between garbage and recycling bins. Mobile clothes recycling bins are also provided for stallholders who wish to dispose of clothing at the end of market day for donation to the Smith Family charity. The mobile nature of the bins makes it easy to empty bins, which assists with litter management on site.



Recycling Station at Meadowbank, Ryde

Strengths

- Convenient to use with reduced risk of worker injury due to limited need to lift heavy bins
- Bins can be stacked during storage
- Range of securing options, lids, hoods and colours available depending on the purpose of bin
- Designed for mechanical lifting by waste collection vehicles
- Safe to use with minimal installation requirements
- Durable in Australian weather conditions
- Low cost to purchase in comparison to other litter bin options
- Familiar appearance to household bins enabling the user to easily recognise its function.

Weaknesses

- Bins may not be considered to be aesthetically pleasing
- Not easily accessible by people in wheelchairs
- The cheaper models are less durable and more prone to breakage
- Rosettes can be too restrictive resulting in waste items being left in the rosette rather than pushed into the bin
- Rough handling of bins can lead to bin breakages, damaged lids and wheels, and loss of parts
- Bins may need to be replaced more frequently than static bin types
- Bins are prone to theft if not secured, and have been shown to attract vandalism (including burning of bins and removal of lids).

Solar Compacting Bins

FACT SHEET

LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Solar bins use a combination of compaction and smart systems that provide greater waste storage capacity than traditional litter bins and real-time monitoring of available bin storage space for effective public place waste management. Solar panels on the roof of the bin power the internal compactor and Wi-Fi enabled communications and alerts. Side panels of the unit can be custom designed.



Solar Compacting Bins at Bondi Beach

Source: Solar Bins Australia

Technical Information

- Purpose-built 120 litre internal mobile garbage bin
- Compaction ratio of up to 5:1
- Waste storage capacity of 600 litres
- Enables real-time status reports and remote monitoring and management of all bins
- Enables collection of historical data to track collection trends and efficiency
- Visual maps showing real-time status of all solar bins available
- SMS alert and/or email sent when bins are 85% full or battery is not receiving enough sunlight
- Built in solar panel and 12 volt battery to operate
- Battery life of 3 to 4 years
- Battery requires up to 10 minutes to recharge and remains charged for up to 12 hours
- Configurable for multi-stream wastes including garbage, recycling and organics
- Compaction bins have hoppers, openable by handles, which keeps all waste contained
- Option for recycling bin inlets to be customised for paper, cans, bottles, plastics or glass
- Option to include ash trays
- UV resistant materials and durable in Australian weather conditions
- Custom designs available for all side panels
- Annual maintenance, with additional checks in the first year (3 monthly and 6 monthly)
- Warranty period of about 1 year
- Indicative dimensions (in millimetres) of one unit are 635 x 773 x 1264 (w x d x h) with handle.

Suitable Locations

Commonly used at universities, tourist hubs and in busy city areas where waste volumes are high, and where the hi tech look of the bin and educational messaging draws the eye. Solar compacting bins are also used in rural and regional areas where regular waste collections are challenging due to long travel distances and the cost of fuel.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

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More initiative funded from the waste levy.



Solar Compacting Bins

FACT SHEET

LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

Nambucca Shire Council in NSW deployed 16 solar compacting bins along the main street of Nambucca and in main parks in late 2014. Since then, the average number of collections has reduced by more than 50%, the average distance travelled by waste collection vehicles per week has been reduced from 1,200 to 300 kilometres and over \$20,000 is saved annually in fuel.

The City of Canada Bay installed a fleet of solar-powered, compacting bins at six locations in 2016 to reduce the potential for overflowing bins and the need to perform regular inspections. The bins are located adjacent to seating at Strathfield Station, and in areas of high-pedestrian traffic on the Great North Road in Five Dock and Henley Marine Bay Drive in Drummoyne. Cloud technology is being used to alert council staff when the bins are full. Implementation of the bins have led to significant reductions in collection requirements.



Solar Bin with Pedal at Parramatta Square

Source: Parramatta City Council

Strengths

- Increased waste storage capacity due to compaction
- Capable of real-time monitoring for improved data management
- Increased collection efficiency and fewer truck movements
- Solar powered and therefore suitable for public place areas
- Requires only ambient light to operate
- Custom designs for bins allows display of targeted educational messaging
- Contains litter within the enclosed bin reducing windblown litter and removing the issue of overflowing bins
- Safe to use with minimal installation requirements
- Compatible with existing collection vehicles due to purpose-built 120 litre internal mobile garbage bin.

Weaknesses

- Keyed access to encasement required during servicing
- Level surface is required for installation
- Unit malfunction may result in public access restrictions until servicing
- Ongoing operational cost of real-time monitoring software
- Recycling slots shaped for paper and beverage containers are not available with compaction unit for safety reasons
- Behaviour change required by those emptying the bins to ensure solar bins are not serviced at the same frequency as standard litter bins
- Potential contract implications given changes to collection frequency.

Underground Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Large capacity mobile garbage bins (up to 1300 litres) are placed below ground on a platform that is raised to street level using hydraulic lifts. The hydraulic lift can be powered either on-site using mains power supply or by vehicle. Disposal inlets sit above ground and can be designed for varying capacities.



Wastedrive and EcoPunto

Inlets to Underground Bins

Technical Information

- Compatible with MGBs up to 1300 litres
- 2 and 4 bin configurations are available
- Multiple units can be co-located
- Inlets have a capacity of 45 to 80 litres
- Structure comes complete and housed in a pre-cast concrete pit
- The capping platform is waterproof and can be insulated to prevent odour generation
- Civil engineering works must incorporate appropriate water proofing measures
- Operation can be 'active' with a mains power electricity connection or 'passive' with hydraulic power supplied by the collection vehicle
- Key access control with control panel and remote control option
- Compatible with user recognition system and pay by weight technology
- Requires maintenance every 3 months, plus an oil level check and lubrication of parts once monthly
- 60 months warranty for mechanical, hydraulic and electrical parts
- Requires an excavation depth of 2.5 metres and a height clearance of 3.5 metres
- Indicative dimensions (in metres) for a 2 to 4 bin configuration are 2.2 x (2.8 to 5.0) (w x l).

Suitable Locations

Best suited to flat terrain in open space areas such as car parks, mall areas or footpaths that can be accessed by standard waste collection vehicles. It requires excavation of a pit to just over 2 metres and an appropriate height clearance during servicing to allow for the raised platform.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

Underground Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

The City of Sydney Council installed underground bins in a cul-de-sac in Darlinghurst NSW to service residential buildings where there had previously been overfilling of bins due to limited waste capacity and misuse of residential bins by commercial businesses. Pin number access to the underground bins was issued to the residents to ensure residential waste inputs only. The installation highlighted the need for appropriate siting and upfront capital investment in civil engineering and weather proofing of all components to reduce ongoing operational costs.

Hastings Borough Council in the UK implemented a two bin on-street recycling bank at Hastings Old Town and St Leonards in 2005 for the collection of mixed glass. Two 1,280 litre wheeled bins were installed underground and lifted on platform during collections by hydraulic equipment powered by a nearby lamp post. Traditional bottle banks are a noise nuisance to residents living nearby and an eye-sore. The underground solution ensures that only the receiver inlets are visible from the street and noise issues are mitigated. At the time, around 8.5 tonnes of recyclable glass were being collected in the bins every month.



Source: Wastedrive and EcoPunto

Raised Platform During Servicing

Strengths

- Increased waste storage capacity provided underground
- Fewer collections required with increased capacity
- Compatible with existing collection vehicles and MGBs
- Separate or mixed waste collections are possible within the one unit
- Increased visual amenity and reduced odour and vermin with waste bins stored underground
- Reduced potential of wind-blown litter from bins.

Weaknesses

- Any dumped waste must be removed from around inlets prior to collection
- Requires ongoing maintenance by trained personnel and repair by suitable engineer
- Confined space permit and associated protocols required if access to underground pit is needed
- Power supply required for hydraulic floor raise
- Siting of units must take into account required depth of excavation, existing underground services and height clearances
- High upfront capital cost
- Siting of units may represent a planning constraint in the short to medium term due to depth of excavation underground and size of unit.

Underground Compactors

FACT SHEET

LITTER BIN INFRASTRUCTURE
FOR PUBLIC PLACES

Source: Wastedrive and EcoPunto

Overview

Small to large compactors are placed below ground on a platform that is raised to street level using hydraulic lifts. The hydraulic lift function can be powered either on-site using mains power or by vehicle. Disposal inlets sit above ground and can be designed for varying capacities.



10m³ Compactors on Raised Platforms

Technical Information

- Compactors range from 5m³ to 20m³ in size
- Compaction ratio ranges from 5:1 to 25:1
- Collection of only one waste stream per unit
- Multiple units can be co-located
- Inlets have a capacity of 45 to 80 litres
- Structure is housed in a pre-cast concrete pit
- The capping platform is waterproof and can be insulated to prevent odour generation
- Civil engineering works must incorporate appropriate water proofing measures
- Key access control with control panel and remote control option
- Compatible with user recognition system and pay by weight technology
- Alerts via SMS to indicate when compactor is 80% full or in case of fault
- Requires maintenance every 3 months, plus an oil level check and lubrication of parts once monthly
- 60 months warranty for mechanical, hydraulic and electrical parts
- Required excavation depth ranges from 2.5 to 3.5 metres
- Required height clearance ranges from 3.5 to 9.0 metres
- Indicative dimensions (in metres) for a 5m³ to 20m³ compactor are (2.3 to 3.4) x (4.5 to 7.8) (w x l).

Suitable Locations

Best suited to flat terrain in open space areas such as car parks, mall areas or footpaths that can be accessed by hook-lift (roll on/roll off) vehicle. It requires excavation of a pit and an appropriate height clearance during servicing to allow for the raised platform and compactor movements.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

This project is a NSW EPA Waste Less, Recycle
More initiative funded from the waste levy.



Underground Compactors

FACT SHEET

LITTER BIN INFRASTRUCTURE
FOR PUBLIC PLACES

Case Studies

In **Abu Dhabi**, hundreds of underground garbage compactors have been installed in residential areas and Tourist Club neighbourhoods in the capital. The compactors have built-in sensors that detect when the compactors need to be emptied. Two sizes of container are used: 7m³ and 20m³. The Centre of Waste Management has reported that the underground systems remove many of the hazards associated with waste left outside premises, such as foraging by pests. The number of daily trips has also been reduced. Above ground bins are being removed from many parts of the city.

Underground compactors have also been installed at locations around Austria, the UK and in Italy including Florence, Venice, Eolie Island and Ischia Island, and other international cities such as Cambridge, Athens, Rio de Janeiro and Doha.



Source: Wastedrive and EcoPunto

20m³ Compactor on a Raised Platform

Strengths

- Increased waste storage capacity provided underground
- Fewer collections required with increased capacity
- Limited manual handling by waste operations staff
- Increased visual amenity and reduced odour and vermin with waste compactor stored underground
- Removes potential for wind-blown litter from bins.

Weaknesses

- Any dumped waste must be removed from around inlets prior to collection
- Requires ongoing maintenance by trained personnel and repair by suitable engineer
- Confined space permit and associated protocols required if access to underground pit is needed
- Power supply required for hydraulic floor raise
- Co-location of units may be difficult due to space constraints
- Siting of units must take into account required depth of excavation, existing underground services and height clearances
- Space constraints may exist for vehicle access and manoeuvring
- Hook-lift vehicle required which may differ from existing in-house council services
- High upfront capital cost
- Potential contract implications given changes to collection frequency and mode of collection
- Siting of units may represent a planning constraint in the medium term due to depth of excavation underground, size of unit and contract implications.

Vacuum Systems

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Automated waste collection systems (AWCS) comprise of a network of underground pipes that transport waste at high speeds from above-ground disposal locations (known as “inlets”) to a central terminal station (stationary system) or central docking point (mobile hybrid system).

As air enters the pipe system under vacuum conditions, the storage valves located underneath each inlet are emptied one by one into the pipeline.

Self-Emptying Litter Bin in Almere, Netherlands

Technical Information

- Available as a “Stationary” system or a “Mobile hybrid” system (with docking points and specialised vacuum trucks)
- Free-standing and hands free litter inlets available
- Public inlet chute capacity is typically 20 litres
- Inlet components include underground electric cable and a small pipe for compressed air
- System is configurable for garbage, mixed recycling and organics (different inlets for each)
- Not suitable for collection of single stream glass, cardboard boxes or bulky wastes
- Screw tanks can be stored below disposal inlets to streamline waste transfer into the pipe system
- Self-cleaning system with air valves and inspection manholes provided at regular intervals
- System operates 24/7, 365 days per year
- Computerised control system, remotely monitored by about 2 full time operators
- Pipe diameter ranges from 300 to 500 millimetres
- Pipes are commonly made out of carbon and steel, composite alternatives are available
- Terminal station is typically located within 2.5 kilometres of the central pipe network
- Terminal station houses bulk waste containers, compactors, exhaust fans, air cooling system, control/ electric room and dust filters
- Trench depth of 1 to 2 metres required for pipes
- Pipeline may be built and extended in stages
- Construction timeline of about 20 months
- Lifetime of the pipes is about 30 years.

Suitable Locations

Best suited to areas where public place disposal inlets can be installed as part of a larger system accepting commercial and/or residential waste. Implementation in tourist hubs and in busy city areas is common place where waste generation rates and the frequency of waste collections are high, and where there is limited space for traditional servicing of bins using waste collection vehicles.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

This project is a NSW EPA Waste Less, Recycle More initiative funded from the waste levy.



Vacuum Systems

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

Sunshine Coast Council is currently implementing an AWCS at the new 53 hectare Maroochydore City Centre. The 6.5 kilometre pipe network will be installed in stages over the next 12 years and inlets for organic, recyclables and garbage will be provided. Waste will be transported from commercial buildings, apartments and public areas to a central terminal station. It will cost approximately \$21 million to install (to be recovered from city centre occupants over the life of the system).

Nyhavn in Copenhagen is a popular tourist destination with old residential buildings, restaurants and bars, and limited storage space for bins. In 1996, the municipality implemented an AWCS for their commercial and public place areas given high waste volumes and challenges presented by narrow streets during waste collections. It included 75 inlets, 3.2 kilometres of pipeline and a central terminal station built on the water. Extensions to the system were made in 2009. The system now manages about 60 tonnes of waste per week. Glass and bulky cardboard are collected separately of the system.



Operation of Self-Emptying Litter Bin

Strengths

- Significantly increased waste storage capacity and collection efficiency with self-emptying bins
- Ability to adjust to fluctuations in waste volumes and 24/7 service availability
- Improvements to the conditions of living and aesthetics of an area with removal of collection vehicles from inner city areas, reduced noise, odour and vermin, and removal of windblown litter due to overflowing bins
- Improved OHS as system operatives are not required to manually handle bins
- Inlets are robust, are unable to be moved or stolen, and are therefore less susceptible to vandalism than typical bins
- Capable of real-time monitoring for improved data management
- Significantly reduced operational costs associated with waste and recycling collection.

Weaknesses

- Stationary system requires suitably sized terminal station
- Mobile hybrid system requires purchase of specialised vacuum trucks
- Requires sufficient waste tonnages for the system to be financially feasible.
- Significant civil infrastructure works and planning required (can be installed as part of wider civil engineering project)
- Installation in an existing built up area may contribute to congestion of underground utilities
- Significant upfront capital costs to install system
- Power required to operate exhaust fans from central terminal station.

Charcoal Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Charcoal bins have been designed for use in parks and picnic areas for the safe disposal of hot coals (also known as “heat beads” or “charcoal bricks”) from charcoal barbecues. The outer casing of the enclosure includes a wide shelf opening for the disposal of hot coals, which slide down into a self-contained ‘hot box’. The coals are then left to cool before emptying the bin.



Source: City of Canterbury-Bankstown

Charcoal Bins along Georges River

Technical Information

- The casing is typically constructed from full stainless steel and weighs 71 kilograms
- The casing can also be constructed of galvanised steel to provide additional corrosion protection
- The internal hot box has a capacity of 120 litres, is double lined, constructed from steel and weighs 115 kilograms
- The sloped shelf can be placed on one or two sides of the outer casing
- A grill assists in the delivery of the hot coals into the bin by ensuring that not all coals enter the bin chute at the same time
- Clearance is provided between the outer casing and the hot box, and there are vents in the outer casing which allow the heat to escape
- Cooled coals are emptied from the hot box via a drawer that slides out from the bottom of the bin
- Custom signage and logo can be included on the side panels
- Warranty period of about 1 year
- Indicative dimensions (in millimetres) are 800 x 800 x 1200 (w x d x h).

Suitable Locations

Best suited to public areas where charcoal barbecues are commonly used such as picnic areas and parks. Bins are fixed to the ground on a concrete pad so that any hot coals escaping the shelf and falling to the ground do not come in contact with grass, which could potentially become an ignition source for a grass fire.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available

n/a

Ratings out of 5. A score of 5 = best outcome.
n/a = not applicable.

Charcoal Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

The City of Canada Bay installed charcoal bins at Cabarita Park on the Parramatta River. Hot coals were a commonly littered item left under park taps despite a charcoal bin being provided. The existing charcoal bin was relocated and multi-lingual signage provided. Rangers also patrolled the park on weekends to engage with users about littering and penalties. Audits after the relocation revealed significant reductions in discarded beads across the surveyed area.

The City of Canterbury Bankstown installed charcoal bins at 3 popular foreshore parks where coals were being left next to rubbish bins, contributing to littering and creating a risk of fire or injury to people stepping on hot coals with their bare feet. Parks staff empty bins within 2 days of a busy weekend once coals have cooled down. To address further incidences of littered hot coals, education staff visit the parks on an ongoing basis to remind park users (particularly visitors to the area) to use the bins provided.



Charcoal Bin at Brighton-Le-Sands

Strengths

- Contains hot coals in a 'hot box' which allows the coals to extinguish without being a hazard to the public
- Disposal of hot coals from two sides is possible simultaneously
- Significantly reduces the potential of hot coals being left beside general litter bins and becoming a burn hazard for the public or a fire hazard for the area
- Reduces littering of this specific waste type.

Weaknesses

- Location of bin not easily changed given it should be fixed to a concrete pad
- The public may still not want to carry hot coals across a park to a charcoal bin, so follow up education and regulation is likely to be required
- Internal hot box bin has a limited capacity (similar to typical litter bins) and therefore bins must be inspected regularly during busy periods
- Outer casing of the bin can be hot to touch due to the disposal of hot coals to the internal bin therefore appropriate warnings and signage are required for safety reasons
- Emptying of bins requires implementing health and safety provisions (i.e. collection only when cool, staff to wear protective gloves, SWMS to be prepared).

Cigarette Butt Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

Littered cigarette butts are a source of toxic chemicals and plastic pollution to our waterways. Cigarette butts bins are especially designed to safely capture cigarette butt litter. They typically have a flat shelf for butting out cigarettes as well as a cylindrical body to restrict air flow into the bin so that cigarette butts are starved of oxygen and further extinguished once disposed of. Ash trays may also be provided as attachments to standard litter bin surrounds.



Source: Envirotoples

Free-Standing Cigarette Butt Bollard

Technical Information

- Capacity ranges from small post or wall mounted units that can hold approximately 500 to 1000 butts, to higher capacity free standing units with a capacity of approximately 2000 to 2500 butts
- Constructed of stainless steel or cast aluminium (polished and powder coated options)
- Fixed or portable free-standing designs
- Units are compact and are easily fixed to bin enclosures, posts, columns and walls
- Units are easy to empty, key lockable and tamper-proof
- Angled shelf prevents butts and other litter items being left on bin
- Slot openings for butts only are provided to deter disposal of other litter items into the bin
- Mounting post and plates can be purchased from suppliers
- Educational messaging and signage is typically included with the unit
- Wet systems are available and filled with water for high fire risk areas so that instantaneous extinguishing of butts is guaranteed
- Duo ash trays and other custom designs are possible
- Servicing and recycling options are available through specific bin suppliers
- Indicative dimensions (in millimetres) for a cylindrical bin (excluding mounting bracket) ranges from 76 to 168 (diameter) x 300 to 930 (height).

Suitable Locations

All publicly accessible buildings in Australia are now smoke-free by law, and the location of cigarette butt bins needs to take this legislation into account. Siting of cigarette butt bins should also consider smokers' attitudes and behaviours, hot spots for littered butts, and potential smoke drift impacts on surrounding businesses. Attaching a cigarette butt bin to an existing litter bin enclosure is commonplace.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available

n/a

Ratings out of 5. A score of 5 = best outcome.
n/a = not applicable.

This project is a NSW EPA Waste Less, Recycle
More initiative funded from the waste levy.



Cigarette Butt Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

The City of Canterbury-Bankstown Council conducted a litter prevention project in 2014 at the retail and transport hub at The Boulevard Lakemba. Council found that residents were generally unaware of litter laws, and that there were cultural and language barriers to understanding signage and enforcement. A consultative and community-based approach to the litter problem was undertaken and new cigarette butt bins were installed. The project resulted in a reduction of overall litter by up to 67%.

In 2015, Canada Bay City Council carried out a cigarette butt recycling project called “Bin your Butts” which reduced the number of butts littered at the Rhodes and Concord precincts by greater than 80%. Transparent artworks were used to display the different components of cigarettes during engagement and enforcement activities. 17 butt litter bins and new signs were also installed. Key learnings from the project were to consider smoke drift when locating butt bins, to generate awareness of fines and to be aware that public infrastructure (e.g. garden beds) can attract butt litter.



Ash Cylinder Mounted on a Pole

Strengths

- Modern designs are generally considered aesthetically pleasing
- Easily mounted to existing infrastructure including council bins, street signs and poles, or brick and concrete walls
- A range of capacities are available to suit the needs of the area
- Easy to service and available as an ash tray insert with certain litter bin surrounds
- Educational messaging is available to generate awareness of the impacts of littering.

Weaknesses

- Must be regularly cleaned and emptied to remain aesthetically pleasing
- Should be located adjacent to an existing smoking hotspot to be effective
- When ash trays fitted to bins are full, the public are likely to leave butts on the rim of the bin or throw cigarette butt litter on the ground
- Siting of a butt bin should consider compliance with public place legislation and policy, and smoke drift impacts on nearby businesses
- Wider canister butt bin designs may not be as effective at limiting air flow into the bin to help extinguish the cigarette butt, and this may lead to smouldering.

Impacts of Littering

- Carelessly discarding of cigarette butts outside a bin is a major cause of fires in Australia and is an illegal activity. Penalties are in place (fines of up to \$450 in NSW) for incorrect disposal of cigarette butts.
- Cigarette butts are the most frequently recorded type of litter in Australia. Cigarette butts are not biodegradable and can take up to 36 months or longer to break down in seawater.

Drive-through Bins

FACT SHEET

LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES



Overview

Drive-through bins are designed to capture waste from people consuming food or drinks in their cars while parked or driving out of a site. Litter bin enclosures or mobile garbage bins situated adjacent to driveways or access roads have been utilised in Australia for this purpose. However, drive-through bins typically have an enclosed lid with a directional, extended chute (also known as a “telescoping lid”) to facilitate the easy disposal of waste from a car.



Drive-through Bins at Porters Lookout, The Hills Shire

Source: Source Separation Systems

Technical Information

- Typically have a capacity of 200 to 220 litres
- Generally constructed from moulded, high density polyethylene incorporating between 25% and 50% post-consumer recycled content
- Can also be constructed from stainless steel, aluminium and timber
- Extended chute is designed to conceal waste, and protect bin contents from rain, birds and pests
- Chute lid can be lifted off or unlatched (using a top access button) during servicing
- Typically provided with liner garbage bags
- Durable and weather resistant
- Securing options depend on the bin type selected
- Overseas suppliers available
- Custom designs are likely to be required in Australia
- Indicative dimensions (in millimetres) of the extended chute lid are about 320 x 750 x 370
- Indicative dimensions (in millimetres) of the litter bin (minus the chute lid) are about 500 x 500 x 800
- The height of the unit is similar to that of a small litter bin enclosure.

Suitable Locations

Best suited to public areas such as car parks and lookouts where people consume food or drink while still seated in their cars. Typically installed by fast food takeaway businesses. The bin must be located adjacent to access roads or lanes at the site, in a location that allows the public time to use the bin prior to driving out of the site.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.

Drive-through Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

Porters Lookout in Dural is a local lookout situated within **The Hills Shire Council** area. Council conducted a litter prevention project to determine the reasons for high litter levels experienced on a regular basis at the site. Council observed two types of behaviours: litter was observed in the green space area of the site in close proximity to the park furniture; and litter was observed in the car park area. Both observations indicated that visitors to the lookout were consuming food and drink in the park and in their cars, and then tossing the waste on to the ground. The litter bin types provided around the lookout were also inconsistent.

Council installed new litter bin enclosures to function as drive-through bins at the car park, placing new and colour coded signage on the enclosure side panels. Surveys of the site following installation of the new recycling stations showed a 70% reduction in litter.



Source: Trashcans Unlimited / Trash Cans Warehouse / RecycleDesign



Drive-through Litter Bins with Telescoping Lids

Strengths

- Convenient and accessible by drivers or passengers in a car
- Removes the need to touch bin when disposing of litter
- Minimal installation requirements
- Durable in Australian weather conditions.

Weaknesses

- Bins (plastic varieties) may not be considered to be aesthetically pleasing
- The chute of a telescoping lid may cause rubbish to become stuck when large waste items or waste bags are disposed of
- Bins may be prone to theft or vandalism if not secured
- Existing designs do not appear to be compatible with MGBs
- Requires regular inspections to ensure effective use of bins
- Existing designs with telescopic chutes may not be easy to obtain in Australia. Custom designs may therefore be needed which may increase capital costs of the bin.

Fishing Line Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Overview

OceanWatch Australia (OWA) designed fishing line bins (known as “TAngler” bins) specifically for the disposal of unwanted monofilament and brittle fishing line. The issue of lost and littered non-biodegradable fishing line puts freshwater and marine environments at risk where it can lead to potential injury or death of wildlife (including birds, turtles and platypus) due to entanglement or ingestion.

TAngler bin installed at Tuncurry, Great Lakes region

Technical Information

- Available in two sizes: standard 1 metre bin and giant 2 metre bin (used as an educational tool at fishing events)
- Constructed of recyclable PVC pipe with a capacity of about 30 litres (small) and 70 litres (novelty)
- Other small litter items can be disposed of into the bin or a general waste bin can be co-located
- Generally fastened to a wood or metal pole
- Holes should be drilled into the base cap to let rainwater drain out
- Fasteners and screw pack included with bin
- The opening should be installed at a minimum of 1 metre from the ground
- Bins are emptied by removing the screw base and using a piece of wire or old coat hanger to snag the material and pull this into a bag
- Standard cost includes a generic sticker highlighting the purpose of the bin to users
- Additional expense for custom-designed stickers and postage.

Suitable Locations

Best suited to areas that are popular with both local fishermen and tourists, including coastal areas and inland rivers, dams, creeks and jetties. Locations should be determined in consultation with recreational fishing clubs to identify key tourist and fishing hotspots and access points. Installation of these bins on to existing infrastructure, such as boat ramps, fish cleaning tables or signage, is common place.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available

n/a

Ratings out of 5. A score of 5 = best outcome.
n/a = not applicable.

Fishing Line Bins

FACT SHEET LITTER BIN INFRASTRUCTURE FOR PUBLIC PLACES

Case Studies

Ocean Watch Australia conducted the NSW Inland Rivers TAngler Bin project between 2009 and 2011. About 43 TAngler Bins were installed at inland fishing hotspots (in river systems and lake foreshores). An educational campaign was delivered with a reach of about 1500 people. Correct placement of the bins was critical to the use and education outcomes of the project. Consultation with local stakeholders was necessary to identify the most strategic bin locations.

Tangler bins have been installed by about 20 councils in Sydney (including Rockdale, Canada Bay, Hornsby, Willoughby and Ryde) and across Australia. Surveys undertaken by OWA across 20 fishing sites in NSW showed that nearly 50% of the sites installing Tangler bins had reductions in the amount of lost / littered fishing line found on the ground. This success could be attributed to local councils participating in communications activities. Positive messaging was shown to be most effective with fishermen.



Source: OceanWatch

Tangler bins at Tweed Heads and Warilla, NSW

Strengths

- Practical, low cost and easy to install
- Easy to service and light weight
- Easy to order replacement bins and parts
- Bins can feature customised stickers with council logos and messaging
- Generates awareness of the direct impacts of unwanted fishing line which ends up as litter
- Numerous case studies to demonstrate the success of the bin at popular fishing sites along inland river and coastal areas
- Bin can accept other small litter items
- Works well as an educational tool for those undertaking recreational fishing.

Weaknesses

- Contents may contain sharps therefore special handling during servicing is required to prevent OHS issues
- Bins may be located in areas that can't be accessed by car so pedestrian servicing may be required
- Bin may be subject to vandalism and damage at certain sites
- Bins must be regularly inspected for fullness and emptied.

Reverse Vending Machines

FACT SHEET

LITTER BIN INFRASTRUCTURE
FOR PUBLIC PLACES

Overview

Reverse Vending Machines (RVMs) facilitate the return of single waste items under an incentive scheme, where the person depositing the item receives a cash, voucher or coupon reward. RVMs are typically used as part of wider Container Deposit Schemes (CDS) for the return of empty drink cans and bottles. The RVM scans the container to determine material type, then weighs, compacts and sorts it into separate compartments of the internal bin by waste stream.



RVM installed by City of Sydney

Source: Envirobank

Technical Information

- Typically accepts up to and including 3 litre containers
- Accepts drink cans, glass and plastic bottles
- Compacts metal cans and plastic only
- Unit monitors container information
- Single unit RVM has an internal bin volume of 234 litres and dimensions (in millimetres) of 480 x 740 x 660 (w x d x h) with separate compartments for different waste streams
- Glass crush or soft drop options available depending on compliance requirements
- Compaction ratio of 1:5 for metal drink containers
- Crushing/compacting occurs for 1 to 2 seconds per container
- RVM returns to idle mode approximately 30 seconds after the last container is crushed
- Standard RVM uses single phase power with single phase motor
- Requires a flat surface for installation
- Different manufacturers and models are available
- RVMs in Australia range in capacity from 900 to 2,000 containers
- Bulk-feed RVMs are also available with a processing speed of about 100 containers per minute and enable storage of high density compacted/crushed containers
- Custom branding and messaging available on RVM outer panels and the incentive coupons
- Typically available by lease arrangement
- Indicative dimensions (in millimetres) of a standard unit are 510 x 1070 x 1910 (w x d x h).

Suitable Locations

Best suited to public places nearby retail outlets or businesses. The RVM unit should ideally be placed against a wall, and requires electricity to operate. Siting of the unit must consider access to planning restrictions, power, security, public user access, visual amenity impacts and unit cleaning, monitoring and emptying requirements.

Guideline Ratings

Cost

Capex (purchase & install)
Opex (emptying bins)

n/a



Amenity

Visual appeal
Ease and safety of use
Cleanliness (litter & pest control)



Servicing

Ease of installation
Maintenance & cleaning
Accessibility for collections
Capacity



Sustainability

Multi-stream option available



Ratings out of 5. A score of 5 = best outcome.
n/a = not applicable.

This project is a NSW EPA Waste Less, Recycle
More initiative funded from the waste levy.



Advocating for the people of Western Sydney

Reverse Vending Machines

FACT SHEET

LITTER BIN INFRASTRUCTURE
FOR PUBLIC PLACES

Case Studies

The City of Sydney ran a 12 month RVM trial in 2014 at Haymarket and Darling Harbour locations. Both locations are high pedestrian traffic areas. Council received a significant positive response to the RVMs from the public via social media. No occurrences of vandalism were experienced during the trial which was attributed to the anti-graffiti coating applied to the machines and placing RVMs in well-lit areas to deter vandals. RVMs required emptying on a daily basis into 'backup' 660 litre bins. A nearby retailer performed simple daily checks and cleaning.

Wyndham City in Victoria recently installed RVMs in response to feedback received from the community. The RVMs are located at a busy food court location and two sports centres. Rewards offered include discount offers for food and beverage, donations to Clean Up Australia, and chances to win passes and memberships. RVMs have been heavily utilised and kids have been observed collecting drink bottles from neighbouring areas to deposit in the machines.



RVM installed by Wyndham City in Victoria

Strengths

- Separates deposited containers by type
- Scans barcodes and monitors inputs for improved data collection
- Potential to increase recycling awareness through use of incentives
- Custom wrapping of the RVM units allows display of targeted messaging
- Safe to use with minimal installation requirements.

Weaknesses

- Only suitable for a limited number of recycling streams and only applicable as a complementary solution to other public place recycling
- Standard size RVMs requires 'backup' bin (i.e. 660 litre) in busy locations
- Potential for public to misuse (i.e. leave behind rejected items, incorrect slot use leading to blockages) which could be mitigated by locating an RVM with a garbage bin
- Siting must consider planning restrictions, access to power, cleaning and monitoring requirements, protection from the weather, and a wall to back the unit up to
- Requires the provision of adequate security measures (e.g. lighting, CCTV).