

Public Place Recycling Toolkit

Third edition: August 2013



Sustainability Victoria
Level 28, Urban Workshop
50 Lonsdale Street Melbourne 3000
T 1300 363 744
E info@sustainability.vic.gov.au
sustainability.vic.gov.au

© Sustainability Victoria 2013 (PR0121)

Printed on 100% recycled paper

Disclaimer

Information in this document is current as at August 2013. While all professional care has been taken in preparing this document, Sustainability Victoria accepts no liability for loss or damages incurred as a result of reliance placed upon its content.

Contents

Introduction	2
1. Research	4
1.1 Check site suitability	5
1.2 Assess waste	5
1.3 Map usage patterns	6
1.4 Target recyclables	6
1.5 Explore alternative options to reduce waste	6
1.6 Engage stakeholders	7
1.7 Plan a PPR system	8
1.8 Budget considerations	8
2. Design	9
2.1 Map bin locations	10
2.2 Determine number, size and type of bin	11
2.3 Consider end users	14
2.4 Designing for occasional events	14
2.5 Choose bin signage	15
2.6 Choose bin openings	15
2.7 Other design considerations	16
3. Implement	17
3.1 Educate staff and volunteers	17
3.2 Educate end users	18
3.3 Launch a PPR system	18
4. Maintain and monitor	19
4.1 Monitor the PPR system	19
4.2 Evaluate success	20
4.3 Ongoing PPR promotion	20
Case study 1: Sports clubs and grounds	21
Case study 2: Parks and reserves	23
Case study 3: Leisure centres	23
Appendix 1: PPR Project Plan Checklist	24
Appendix 2: Waste bin inspection sheet	26
Appendix 3: Fact sheet - Assessing your waste - guidelines	27
Appendix 4: Crime Prevention Through Environmental Design (CPTED)	29

Introduction

Public place recycling (PPR) refers to systems installed in high use public areas to collect recyclable materials from the waste stream. It is an integral part of Victoria's waste minimisation landscape with PPR systems operating in many different public places including retail, recreational, sporting, tourist and transport sites. PPR systems help people dispose of waste responsibly by giving them the choice to recycle even when they are away from home.

Improving and expanding PPR infrastructure and education demonstrates a commitment to waste minimisation and greater resource recovery. For local and state government, it visibly demonstrates leadership in sustainability in public environments. It also extends recycling away from home through behaviour change and community engagement.

Research indicates that providing accessible and well-maintained bins has a large impact on litter prevention. The Victorian Litter Strategy 2012–14, developed by Sustainability Victoria (SV) on behalf of the Victorian Government, identifies greater use of PPR as a key action to reduce littering in high use public areas.

SV is a Victorian Government agency that leads on best practice in litter prevention programs and drives integrated waste management and resource efficiency in Victoria. In 2007, SV first published a guide to designing and implementing PPR systems based on research and consultation with local government and the waste management industry.

This Public Place Recycling Toolkit 2013 (PPR toolkit) is a revised version of the 2007 guidelines. The project model used is very similar to the previous version but communication and engagement has been integrated throughout the process, instead of listed as a separate step. Other changes include removal of technical details on bins and bin-related products and simplified signage for recycling and rubbish bins.

Who the toolkit is for

The PPR toolkit is a useful resource for any organisation looking to implement or improve a PPR system. It will be most relevant for local government and waste management organisations and has been written to support a PPR project manager.

How to use the toolkit

The PPR toolkit is based on an ideal and effective PPR project model. PPR systems may differ in scope and detail, depending on location and human activity at the site, but the same project planning principles apply. The PPR project model is based on four steps:

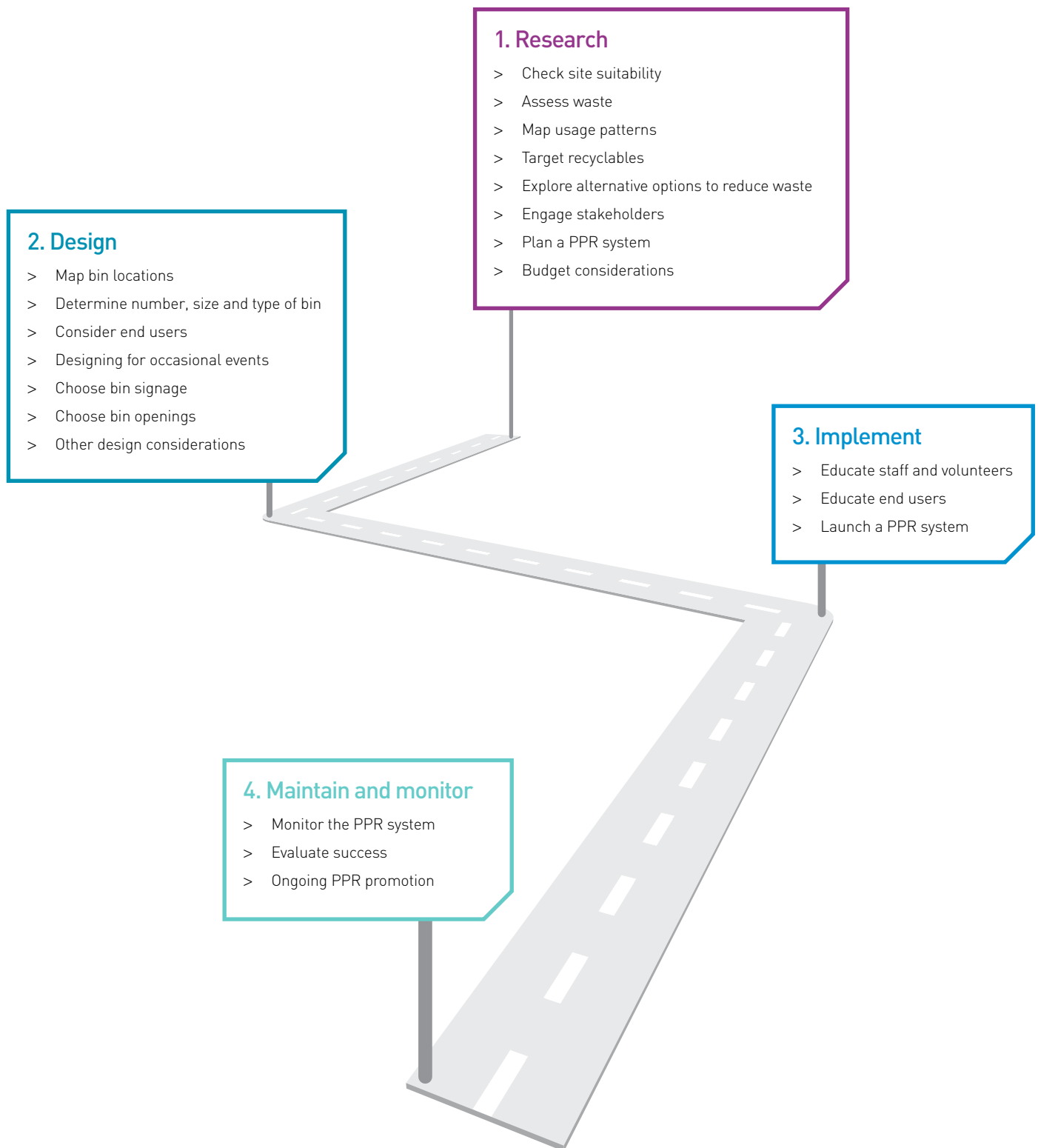
1. Research
2. Design
3. Implement
4. Maintain and monitor

Each of these four steps is broken down into key activities as shown in Figure 1 on page 3.

The appendix contains an overall project plan checklist that summarises these steps and activities. There is also a waste bin inspection sheet template in the appendix.

The case studies provide advice from other PPR planners about installing PPR systems in sports clubs and grounds, parks and reserves, and leisure centres. For more information about PPR in shopping precincts see the Australian Packaging Covenant's Guidelines for Public Place Recycling (PPR) in Shopping Precincts and Public Places available at www.packagingcovenant.org.au/projects.php/17/closing-the-loop-on-mordialloc-shopping-strip

Figure 1: The PPR project steps and key activities



1. Research

To understand what opportunities are available to introduce a PPR system, gather information and data about:

- > the site and its activities
- > consumption and disposal patterns at and around the site
- > how waste is currently managed
- > opportunities for greater resource recovery.

PPR research is based on eight activities. The checklist below can be used to track progress.

Table 1: Research progress checklist

Activity		Details	<div>✓ X</div> Complete
1.1	Check site suitability	Is the site suited to PPR? If not, can it be improved to make it suitable for PPR?	<input type="checkbox"/>
1.2	Assess waste	How much waste and recycling is there? When do peaks occur? Are there sufficient recyclables to install a PPR system?	<input type="checkbox"/>
1.3	Map usage patterns	Is there a clear pattern of human activity and waste disposal behaviours?	<input type="checkbox"/>
1.4	Target recyclables	Which recyclables will be the initial focus and which will be introduced when a PPR system is up and running?	<input type="checkbox"/>
1.5	Explore alternative options to reduce waste	Are there other strategies to reduce the amount of waste in the area?	<input type="checkbox"/>
1.6	Engage stakeholders	Have stakeholders been identified and a stakeholder plan created?	<input type="checkbox"/>
1.7	Plan a PPR system	What collection and recycling services are available? Who will be responsible for maintaining and monitoring a PPR system?	<input type="checkbox"/>
1.8	Budget considerations	Have less obvious items and activities been factored into the budget?	<input type="checkbox"/>

1.1 Check site suitability

Firstly, assess whether the site is suited to a PPR system, taking into account the following factors:

- > **Current litter and bin usage levels:** sites that are clean and well maintained suggest that existing waste management works and there is a positive waste management culture.
- > **Cultural or environmental significance of the location:** sites that are valued are more likely to be treated respectfully.
- > **Existing waste infrastructure:** may be adapted to meet PPR needs.
- > **Ease of access to bins:** sites with impediments to installing and maintaining bins and collecting recyclables may not be suitable for PPR systems.

Increasing site suitability

If a site has high levels of littering and low bin usage, a litter reduction program can improve disposal behaviour in preparation for a PPR system. Potential litter reduction measures include:

- > installing more rubbish bins
- > redeploying of current rubbish bins into a more appropriate configuration
- > increasing rubbish collection frequency
- > improving signage
- > improving public education.

A PPR system can be installed once disposal behaviour meets expectations; measured by establishing baselines and monitoring reduction.

As a general rule, recycling will be more successful when part of a broader litter prevention effort. The Victorian Litter Action Alliance (VLAA) Local Litter Measurement Toolkit has a number of easy to use resources to assess the suitability of a site and measure litter. Visit www.litter.vic.gov.au for more information.

1.2 Assess waste

An assessment of waste generated onsite will indicate whether the amount of recyclables likely to be collected warrants installing a PPR system.

Waste data is also used to:

- > target recyclable types
- > guide bin design and configuration
- > determine collection frequencies
- > assess the costs of operating a PPR system.

Waste assessments should ideally be done at peak periods to ensure a PPR system can accommodate the highest expected demand, either with sufficient permanent infrastructure or planning for temporary installations as required.

The predominance of waste and recycling types may also vary on weekly, monthly or seasonal cycles. Understanding this can be central to PPR design and a series of waste audits to understand waste and recycling patterns may be required.

Reviewing the waste and recycling practices in an area may also indicate the predominant recycling types and waste disposal hotspots. Working on the source as much as the bin may be appropriate if the waste audit is made up of products from nearby food outlets or traders (see 1.5 Explore alternative options to reduce waste on page 6).

Waste audits

A waste audit assesses the proportion and types of recyclables compared to overall waste collected. It forms a baseline for monitoring waste and tracking changes in waste types. While more detailed data is preferred, the depth of data collected needs to be balanced with the ease of collecting it. Choose from a basic or detailed audit:

- > **Basic audit:** A visual estimate of the volume of each waste stream in existing bins e.g. paper 30%, containers 20%. A volume-to-weight conversion table can then convert volumes to approximate weights.
- > **Detailed audit:** Physically sorting, weighing and recording waste streams by material type.

A basic audit is much simpler and quicker; however, if contamination is likely to be an issue, or exact weights are needed to negotiate a recycling collection contract, a detailed audit may be required.

The VLAA Local Litter Measurement Toolkit and the 48 square metres litter count methodology are available at www.litter.vic.gov.au and can assist the collection of waste data as part of an audit. In order to accurately measure the effectiveness of a litter program, conducting audits at regular intervals is preferred e.g. every six or 12 months.

When measuring the effectiveness of a particular project, a pre, mid and post-project waste audit can be considered. Proposed interventions, including installation of signage, should fit in with the audit schedule. This allows the audit to assess the effectiveness of the intervention by tracking any changes in litter.

If there is a history of waste collection from the site, there is the added advantage of having data to compare waste audits with.

See Appendix 2 for a waste bin inspection sheet template on page 26.

See Appendix 3 for guidelines about assessing waste on page 27.

1.3 Map usage patterns

Usage patterns show how people interact with their environment including points of interest where people might rest and possibly eat. It also measures pedestrian routes, sight lines (the visibility of a bin for pedestrians) and current waste disposal behaviours.

Usage patterns can change over time in line with different seasons and holiday periods. Trends for a particular retail or food outlet type can also affect usage patterns.

Spend time observing and experiencing the locality - as an end user, not just a PPR planner. To increase understanding and establish stakeholder relationships ensure there is an understanding of the area from the property manager's point of view.

Usage patterns help decide where to locate PPR systems and points for consideration include:

- > **Routes:** look for routes and pathways, high visibility approaches, entries, exits and access.
- > **Refreshment and food stops:** where most beverage and food waste is generated (but not necessarily consumed).
- > **Rest stops and attractions:** places where people possibly have more time to think and make the choice to recycle.
- > **External destinations:** the area surrounding the site should be factored into usage patterns e.g. car parks, nearby activity areas, side streets and the whole neighbourhood environs.

These elements will help formulate evaluation and review arrangements later on.

1.4 Target recyclables

When deciding which recyclables to target, consider taking the following steps:

1. Use a waste assessment to determine which recyclable types typically predominate in bins at the site.
2. Use a map of usage patterns to pinpoint whether material types are linked to specific areas or activities happening at the site e.g. the main items at picnic grounds might be takeaway containers, wrappers and bottles.
3. Quantify material types in terms of likely yield by weight/volume per collection and over a contract period.
4. Assess which recyclable types will be accepted by the most conveniently located recycling processors.

Deciding which recyclables to target will influence the design of the bin installations. In some cases, it might be worth working on the source of the waste (see 1.5 Explore alternative options to reduce waste).

Staging streams

A step by step approach to targeting recyclables can be taken by introducing the collection of one recycling stream at a time.

The first stream selected will ideally achieve a balance between the quantities of recyclables recovered with the operational ease and effectiveness of collection and separation.

An approach could focus on collecting a co-mingled stream of containers, such as PET (polyethylene terephthalate) and HDPE (high-density polyethylene) plastic bottles, glass bottles, liquid paperboard cartons and aluminium cans.

Or a focus on paper, newspapers and cardboard, or food and paper for compost.

Once a PPR system is operating and the public is accustomed to using the facilities an assessment can take place to consider adding further recycling streams.

1.5 Explore alternative options to reduce waste

If a waste audit reveals a substantial volume of waste coming from surrounding businesses, tackling waste at the source is an option (see 1.2 Waste audits on page 5).

If a PPR system is in a shopping precinct where the recyclables are predominantly from food and drink, local business and traders can have a direct role in maximising recycling yields by changing food take away packaging e.g. from polystyrene to cardboard or paper.

1.6 Engage stakeholders

A stakeholder is any person or organisation affected by a PPR project. Most stakeholders will influence the success of a PPR system to some degree. Building positive relationships helps develop the best possible PPR solution and project support.

Stakeholder engagement should be considered from the outset and maintained continuously throughout the project. A stakeholder engagement plan will help maintain stakeholder relationships over the life of the project.

In the early stages, time will need to be dedicated to information gathering and bringing people up to date with the project concept. At later stages, time may be spent working directly with a project group on bin operations and monitoring.

Engaging with end users throughout the research and planning stage of the project will help develop a PPR system that is useful to the audience.

Who are my stakeholders?

Various stakeholders may be directly or indirectly involved in different stages of the project. It is useful to think of stakeholders in terms of what they bring to the project and to what degree the PPR project manager will depend on them when a PPR system is in place. See Table 2 for a list of stakeholder types.

Table 2: Stakeholder types in a PPR project

Type	Who are they?	Purpose of engagement	Examples
Situational	Local people and organisations affected by the initiative in some way.	<ul style="list-style-type: none"> > To learn from their experience of the site and the nature of public patronage. > To educate and interest them in the project to increase success. 	<ul style="list-style-type: none"> > Traders and food businesses > Venue and centre managers > Tourism operators > User groups such as sports and dog clubs.
Experts	People with expert knowledge related to delivery of the project.	<ul style="list-style-type: none"> > To obtain advice and intelligence to ensure a PPR system is fit for purpose and appropriate to the site (if working in local government, many of these experts will be available within the organisation). 	<ul style="list-style-type: none"> > PPR system designers > Bin manufacturers > People with special site knowledge e.g. open space and recreation managers, urban and heritage planners > Landscape architects > Parks and garden managers > Communications professionals > Council staff already managing waste and litter at the site.
Operators	People, organisations and contractors involved in implementing and operating a PPR system.	<ul style="list-style-type: none"> > To implement and operate a PPR system. 	<ul style="list-style-type: none"> > Bin installation staff > Cleaning and maintenance staff > Waste contractors > Prospective recycling contractors > Council staff already managing waste and litter at the site > Site staff and volunteers.
End users	People that will use a PPR system onsite.	<ul style="list-style-type: none"> > To educate and encourage them to effectively use a PPR system. 	<ul style="list-style-type: none"> > Site users e.g. shoppers, bush walkers and event goers.
Decision makers	The people or group responsible for setting direction, approving projects and budgets	<ul style="list-style-type: none"> > To advise on risk management issues for the organisation > To provide updates in order to justify PPR budgets or to secure new PPR funding 	<ul style="list-style-type: none"> > Councillors > Board-members > CEOs > Senior management

1.7 Plan a PPR system

Understand what collection and recycling services are available and if the PPR project manager is responsible for maintaining and monitoring the PPR system. When determining the system operations consider the following:

- > **Emptying bins:** Collecting waste and recyclables from PPR bins.
- > **Separating recyclables after collection:** In the back-of-house areas of venues and shopping centres.
- > **Processing:** Arrangements with the recycling plant operator.
- > **Maintaining the infrastructure:** Regular checks and repairs.
- > **Monitoring and evaluation:** Most likely conducted by the PPR project manager.

Operational arrangements require cooperation between parties. Arrangements can be established informally or as part of a contract, schedule or agreement. Roles and responsibilities of volunteers and people that do not report to the PPR project manager will need to be confirmed (for more information about working with volunteers see 3.1 Educate staff and volunteers on page 17).

Selecting contractors

Arrangements with new or existing contractors are the foundation of the operations and time is needed to research and negotiate waste contracts.

A current waste contract could be adapted to cover recycling collections, or it may have the capacity to provide a complete recycling service from bin to plant.

The recycling contract should be based on the project's waste audits and other research with estimates of weekly quantities, contamination levels and peak periods factored in. If introducing PPR to a site with an existing waste management service there may be longer term data to work with.

Contract standards

Contracts should be performance based with scope for independent auditing and flexibility for variations. There are certain basic conditions that should be stipulated in the contract including:

- > recycling and rubbish bins do not overflow
- > overflows and litter in surrounding areas are cleaned up promptly
- > hygiene, maintenance and repair standards
- > PPR training and education for operations and other staff, such as caterers and cleaners
- > conforming to Australian Standards for unenclosed mobile bins wherever possible
- > regular reports and feedback on yields, contamination, littering and problem bins or hotspots
- > a commitment to continuous improvement
- > demonstrating separate collection and transport of waste and recyclables.

Contamination

Recyclers may reject loads or impose financial penalties when contamination exceeds a certain limit. The allowable level of contamination depends on the reprocessing plant's capabilities and can range from as low as 3% up to 50%.

Obtaining advice on processor requirements and contamination limits is essential to minimising this form of contract risk.

Containing contamination

Achieving recyclable streams with minimal contamination is a challenge, especially when introducing a new and possibly unfamiliar service that requires correct disposal by the public.

Design features such as bin openings, the bin location, good signage and working on the source can help control the contamination.

1.8 Budget considerations

A number of factors will have an impact on the cost of a PPR system. There are obvious costs associated with a PPR system including bin infrastructure and waste collection. Less obvious items and activities that may impact budget are:

- > changes to existing collection contracts to reflect increased bin infrastructure
- > changes to existing bin infrastructure (e.g. signage and placement) when installing new bins to maintain consistent look and feel
- > contamination of recycled matter
- > security or increased security
- > evaluation.

2. Design

The design of a PPR system should begin once the PPR site has been mapped and research conducted to understand waste and recycling quantities and types, and peaks in recycling disposal. The first step is to work out the numbers and types of bins for the site and how to use signage to ensure visibility and correct bin use.

There are a range of bin products and services and considerations are maintenance and replacement needs, longevity, and installation lead times.

Some aspects of bin design have a strong influence on waste disposal e.g. type of bin opening, bin height and capacity and whether the aesthetic suits the site.

The design stage is based on seven activities. The checklist below can be used to track progress.

Table 3: Design progress checklist

		✓ X Complete
Activity	Details	
2.1 Map bin locations	Are bins visible and accessible at commonly accessed and convenient disposal points? Are there enough bins to cover the site?	<input type="checkbox"/>
2.2 Determine number, size and type of bin	Is there the right size and type of bin to collect anticipated quantities of waste and recyclables? Will permanent or mobile bins be used, or a combination of the two?	<input type="checkbox"/>
2.3 Consider end users	Does the PPR system take disability into account? Is communication across cultures or languages required? Are there any factors unique to the site in terms of user behaviour?	<input type="checkbox"/>
2.4 Designing for occasional events	Are there occasional events at the site?	<input type="checkbox"/>
2.5 Choose bin signage	What signage will be used on bins and around the site? Are the signs clearly visible?	<input type="checkbox"/>
2.6 Choose bin openings	What bin openings are best suited to the waste profile of the site?	<input type="checkbox"/>
2.7 Other design considerations	Is the design safe, clean and durable?	<input type="checkbox"/>

2.1 Map bin locations

Situational research and an understanding of existing infrastructure are used to map key disposal points and activity hotspots. Points for consideration include:

Routes and visibility: For bins to be useful, they must be visible and easily accessible. Bins should either 'intercept' human traffic at points where people are ready to dispose of recyclables, or be placed in the vicinity of where people eat or rest. Suitable disposal points are near entrances, exits, seating and toilets or along walkways and other high traffic areas e.g. car parks. Disposal can often happen far from the point of purchase or consumption.

Distance to use bins: When locating bins, consider how far people are prepared to go to use a waste bin. What is the ideal distance between bins at the site? There is no correct answer for all situations however research suggests a range of 3 to 14 metres is preferred by users.

Pedestrian destinations around the site: People often delay disposing of waste until leaving the site, so placing bins in surrounding areas and streets can maximise yield.

Information for end users: The public should be informed about the PPR system and what is expected of them by indicating what recyclables are accepted via signage.

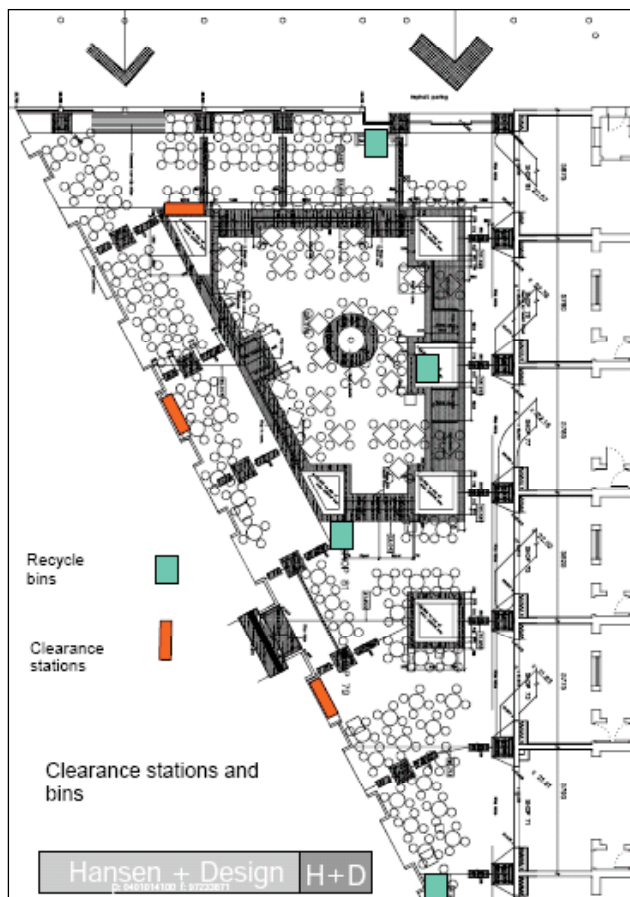
Practicality and safety: While human access is critical, bins need to be located where it is practical and safe to empty them. Check that bin locations are aligned with emergency response plans.

Figure 3: Site layouts mapping bin locations

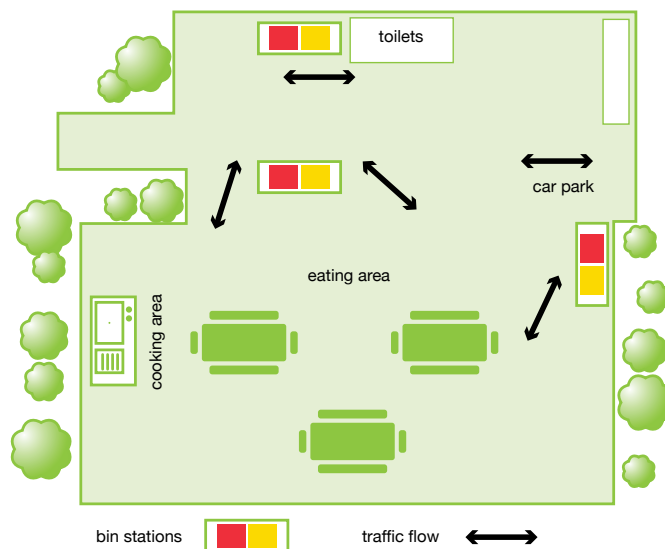
Below are two examples of site layouts - one for a park and the other for a small food court.

Bin placement: food court

The following is the layout of the Queen Victoria Market Food Court. Note that the recycling bins are paired with rubbish bins. Careful placement of twin bins outside the food court was part of the planning process.



Bin placement: parkland



2.2 Determine number, size and type of bin

Sufficient bin infrastructure is required to handle anticipated amounts of waste and recyclables at each of the key disposal points and activity hotspots. Infrastructure may vary across the site to meet differing waste disposal patterns, volumes and types of recyclables. In principle, bin sizes will reflect activity around that location.

Number of bins

Ideally PPR bins should be at every key disposal point and activity hotspot, taking into account the optimum distance between bins. A combined permanent and mobile scheme may be an option, especially for sites with peaks and troughs of recyclable quantities.

Size of bins

Bin size is based on demand at a particular location but also takes into account practicalities related to collection and maintenance.

Bin numbers and dimensions should be in balance with the amount of recyclables expected and how often they are emptied. It may take a few attempts to get this right so it is preferable to have flexibility within the collection contracts to minimise additional costs.

Types of bins

There are several bin configurations to choose from (see Table 4) based on site usage patterns, ratio of waste to recyclables, existing bins in the vicinity, available space, budget and aesthetics. Whatever configuration is chosen, the following principles apply:

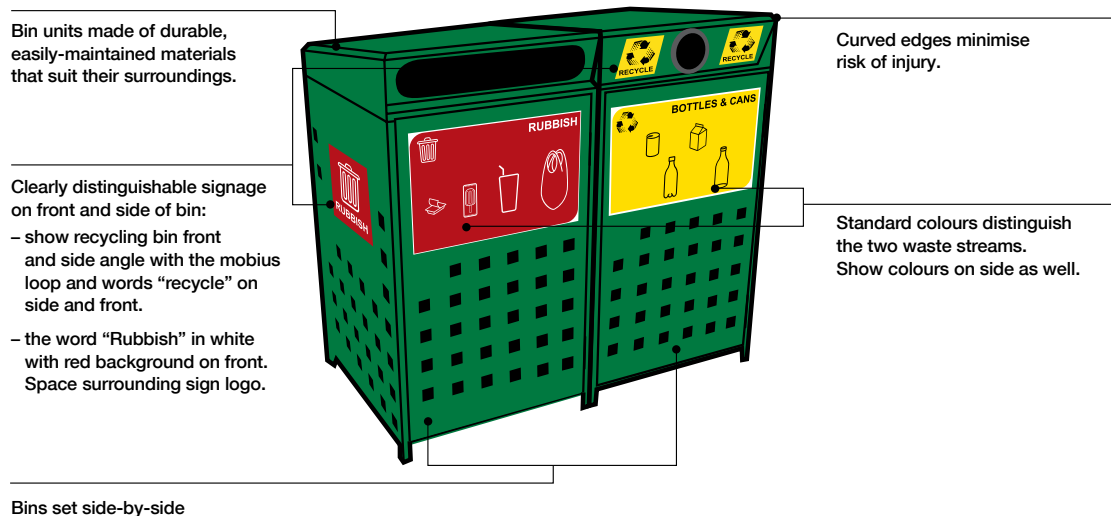
- > Place bins side by side, not back to back, and as close as possible to each other for ease of use.
- > Ensure the recycling bin stands out using colour, signage, lids and other design features. It can be difficult for the user to determine the difference between a waste and recycling bin if there are no distinguishing features.
- > Have cigarette butt receptacles built into rubbish bin design or placed to the side of the rubbish bin.
- > Choose the right bin openings as this can influence what is recycled, wasted or littered (see 2.6 Choose bin openings on page 15).

Table 4: Bin configurations

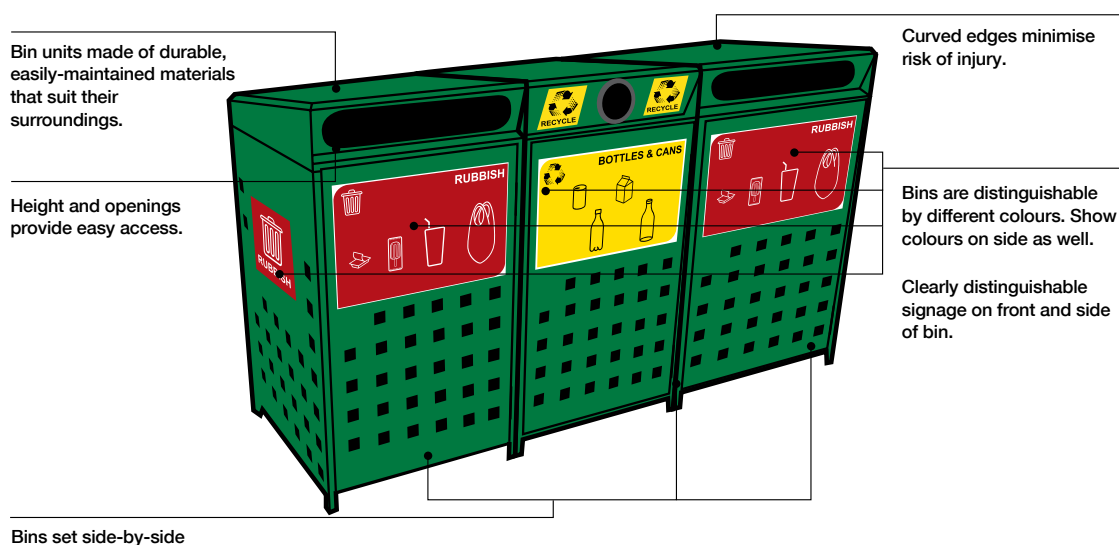
Bin configuration	Description	Advantages/disadvantages
Two-bin system	A recycling and a rubbish bin next to each other and facing the same direction.	Users have a clear choice between disposing of waste as rubbish or as recycling. Fits into smaller spaces.
Three-bin system	Two rubbish bins either side of and flanking a recycling bin, all facing the same direction.	If waste volumes are high, or where the public is generally less adept at separating waste, this configuration minimises littering while also maximising overall waste collection. This configuration is ideal if the ratio of waste to recyclables at the site is 2:1.
Single bin	One single bin to collect all waste and recyclables	Recyclables will need sorting and separating from waste which may not be operationally affordable or feasible. This configuration does little to educate the public about recycling.

Figure 4: Permanent bin configuration systems

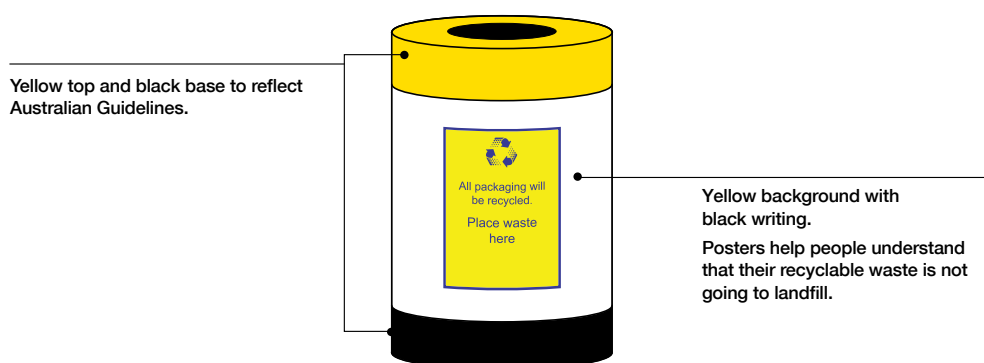
Two-bin permanent system



Three-bin permanent system



Single waste and recycling system



Permanent or mobile bins

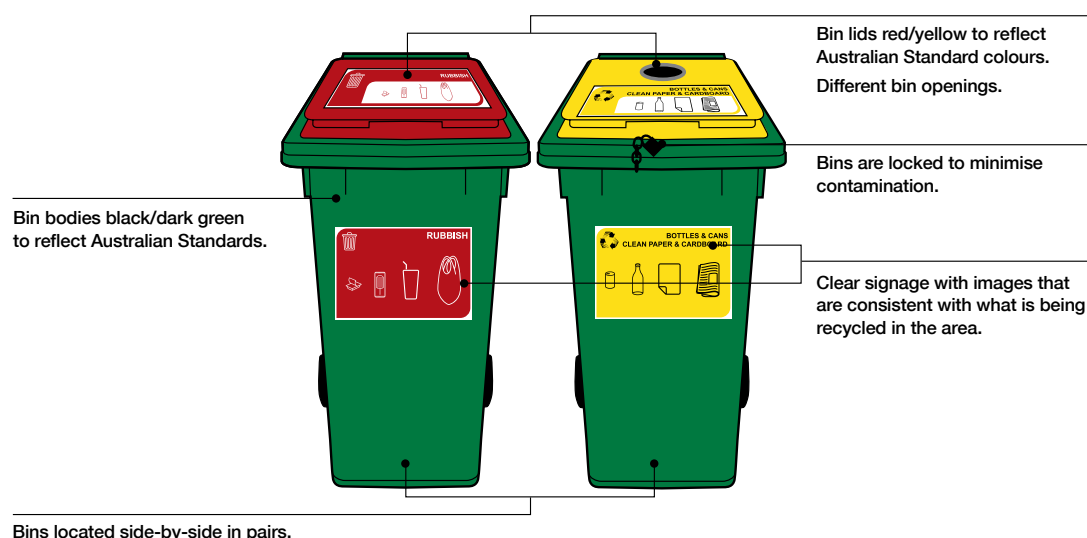
Rather than installing permanent PPR systems, a combination of permanent and mobile bins provides flexibility and allows the trialling of locations, configurations and signage.

Venues or locations with seasonal or occasional peaks of human activity might decide to supplement permanent PPR systems with mobile ones as required.

Table 5: Reasons to choose permanent or mobile PPR systems

Reasons to go permanent	Reasons to go mobile
<ul style="list-style-type: none"> > The infrastructure and operation costs of installing and servicing a permanent PPR system all year round are justified. > Greater durability and security are required. > Aesthetics or heritage values are important, or the infrastructure needs to complement the surroundings. > The PPR system can be incorporated into overall landscape or building design. 	<ul style="list-style-type: none"> > For sites with occasional but regular events - mapping out a basic mobile PPR layout will guide event managers. > To increase recycling volumes and yields associated with predictable seasonal or periodic peaks in waste and recycling disposal e.g. holidays, special days, school excursions and weekends. > To test the layout of a permanent PPR system with mobile infrastructure - great approach to gauge effectiveness of bin locations and signage, and accustom the public to PPR.

Figure 5: Two-bin mobile system



2.3 Consider end users

An effective PPR system meets the needs of its end users. Consider in the early stages of design the different people likely to use the PPR system and their behaviours.

Disability access

If the organisation has a disability action plan, check to see if it includes any references to PPR or placing infrastructure in the public realm. Bin height, bin direction and access should consider the needs of people in wheelchairs or mobility scooters.

Cross-cultural communication

Producing materials in other languages can be costly and time consuming, with no simple way to evaluate their effectiveness. As a minimum, translate the key words 'rubbish' and 'recycling' for bin signage. Associating these words with images and standard colours can educate users to understand the difference.

If the site (or event) has a high proportion of people from identifiable cultures and language backgrounds, this is an opportunity to find out how best to communicate PPR via consultation.

Sports clubs and grounds

Local government expects sports clubs that manage grounds and host spectator events to take responsibility for their waste and recycling management.

PPR at sports grounds requires training, education and ongoing engagement to get a commitment from people that manage their own site (for more information see Case study 1: Sports clubs and grounds on page 21).

Parks and reserves

Establishing PPR systems for small parks can be costly because of low recycling volumes and the potential distances involved in collections.

At parks in non-urban areas, behaviours tend to be more relaxed. Users may stay away from home longer than usual and possibly accumulate more waste. Prime PPR locations are car parks, entries and exits, associated shops and eateries, campgrounds and rest stops (for more information see Case study 2: Parks and reserves on page 23).

2.4 Designing for occasional events

Many community festivals and events occur in public places or venues at regular but infrequent times over the year. Developing a mobile PPR system specific to the event is likely to be the most cost-effective and efficient solution. Standard bin configurations apply (see Table 4 and Figure 4 on pages 11 and 12).

Event organisers may seek advice from local council on relevant rules and regulations and to source waste equipment.

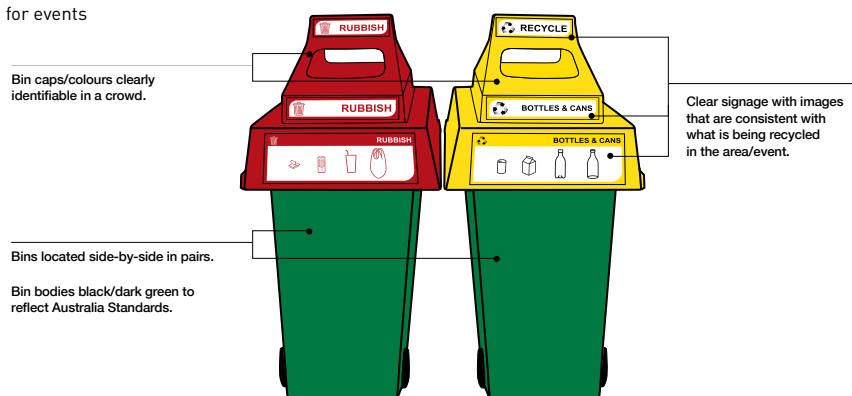
For sites with regular but infrequent events, it might be feasible to create a waste management plan that:

- > stipulates PPR bin configurations
- > provides a generic site plan if possible
- > outlines the operational aspects of conducting PPR at the event.

Event organisers can include clauses in vendor and supplier agreements that would increase PPR at the event. For instance, catering contracts can stipulate front and back of house recycling across the whole location and surrounds, and food and beverage packing used by dining and take away suppliers can be regulated to increase recycling yields.

For more information about reducing waste in public spaces see the SV Public Place Recycling (PPR) Toolbox for Venues available at www.sustainability.vic.gov.au/www/html/3494-guidelines.asp. The toolbox is primarily intended for managers and staff of community venues such as clubs, sporting centres, and other indoor facilities.

Figure 6: Two-bin mobile system for events



2.5 Choose bin signage

Good PPR signage conveys information to help people understand what behaviour is expected of them to maximise proper use of facilities and recycling yields.

PPR signage should attract attention and distinguish recycling from rubbish, preferably using colour coding. It can reinforce the message to reduce, reuse and recycle.

While signage on and around bins is important, so too is signage at key traffic points, especially exits and entries (if suitable).

Colour coding

Standardising colours for signage, bin enclosures and bin lids maintains consistency, ready recognition and helps people make accurate and self-motivated recycling choices. Colour coding standards for waste and recycling bins have been in effect nationally since the 1990s. The Australian Standard for colour coding waste containers¹ continues to be used across Victoria and is publically recognised. It is preferable to use these standard colours on bins, bin enclosures and signage:

- > Commingled recyclables: yellow
- > Rubbish: red
- > Food organics: lime green or burgundy
- > Paper/cardboard: blue

Recommended signage

Sustainability Victoria recommends using the Away from Home Waste Signage Guidelines available at www.sustainability.vic.gov.au/www/html/1709-public-place-waste-signage.asp. This guide provides all the information to deliver simple and effective waste signage for an event, venue, school, workplace or a public area.

2.6 Choose bin openings

The design of the bin opening has been a critical success factor in some PPR projects. The opening of the recycling bin should ideally look different to the opening of the rubbish bin. It should also be designed for targeted recyclables.

Rosettes are the most commonly used PPR opening, to the extent that people now associate them with recycling (Figure 7). Although not suitable for paper, cartons and other takeaway containers, rosette openings work well if targeting bottles and cans.

Figure 7: Rosette opening on a recycling bin



Photo courtesy of City of Yarra.

Situational research will help anticipate any special bin opening characteristics required for waste produced at the site e.g. if end users are consuming takeaway pizza onsite, the bin opening must be large enough for pizza boxes, or these are likely to become waste or litter (see Figure 8).

Figure 8: Rectangular opening on a recycling bin to accommodate pizza boxes



Photo courtesy of Monash City Council.

The ideal bin opening has the following characteristics:

- > Designed for targeted recyclables
- > No need to touch the lid to use the bin
- > Smooth opening with no sharp edges
- > Keeps out rain and scavenging animals.

In outdoor locations, if there is no separate unit for cigarette butts, ensure that openings are safe for disposal of cigarette butts. The *VLA Cigarette Butt Litter Prevention Kit* has information about developing, planning and implementing a cigarette butt litter prevention program. Visit www.litter.vic.gov.au for more information.

¹ Standards Australia, AS 4123.7-2006: Mobile waste containers - Colours, markings and designation requirements www.standards.org.au.

2.7 Other design considerations

Other design considerations include safety from injury, hygiene and durability.

Safety from injury

Secure mobile bins by either enclosing them in a lockable enclosure or by attaching them to a post or frame.

The design of bins and enclosures should consider fire risk and potential security threats. For specific guidance, refer to AS 4123.6-2006: Mobile waste containers - Health, safety and environment on the Standards Australia website www.standards.org.au.

Hygiene

To protect humans and wildlife from recycling and waste public bins are surrounded by enclosures; generally made from stainless steel or powder-coated metal cages that surround a waste or recycling bin. A loose metal weave enclosure is preferable to a close mesh or solid exterior, as it allows for easier inspection.

Durability

Bins should be made of durable, easily maintained material that will resist corrosion from rain, sunlight or salty air. Resistance to damage from wildlife, pests and vandals may be important, depending on the location of the PPR system.



Bins at Falls Creek designed to withstand snow.

3. Implement

Implementation should be based on sound research, good design and solid planning. Once the PPR system is installed, operational staff will begin to manage and potentially promote it to stakeholders.

The following activities would take place once the PPR system is installed. The checklist below can be used to track progress.

Table 6: Implementation progress checklist

	Activity	Details	✓ X Complete
3.1	Educate staff and volunteers	Are there policies and guidelines in place? Is there training for staff and volunteers?	<input type="checkbox"/>
3.2	Educate end users	Are the bins visible and accessible? Is signage easy to understand? Is there additional signage to explain PPR and promote recycling?	<input type="checkbox"/>
3.3	Launch a PPR system	Has local media been contacted and will there be a stakeholder launch event?	<input type="checkbox"/>

3.1 Educate staff and volunteers

While contractors will operate within the confines of a formal agreement, the success of a PPR system may rely equally on staff who are not directly managed by the PPR project manager e.g. third party cleaners, shopkeepers and building managers.

Some PPR projects also depend on volunteers who may not see recycling as a priority. PPR initiatives at sports clubs and grounds rely heavily on club staff and volunteers being actively involved. For more information see Case study 1: Sports clubs and grounds on page 21).

Different degrees of training, guidelines and documentation may be required to educate staff and volunteers in the broader principles of recycling, as well as how to work with the PPR system to best effect (see Table 7). Education and regular engagement can be more important than bin positioning in some PPR schemes.

Table 7: Education strategies for staff and volunteers to maintain a PPR system

Method	Details
Policies	Develop a policy on PPR system maintenance supported by procedures/guidelines.
Procedures/guidelines	Prepare procedures/guidelines in an easy to use format: brief, succinct and step by step instructions with diagrams, checklists and suggestions.
Education	Provide access to educational opportunities on the principles of recycling and waste management.
Training	Train personnel to operate and maintain a PPR system using the procedures/guidelines. A contractor may also contribute to training initiatives.
Tools	Prepare documentation and other materials to support PPR training and for operating the system, including measurement and evaluation proformas.
Expertise	The PPR project manager may be the expert contact (at least initially) and be involved in training sessions and follow-up evaluations.

3.2 Educate end users

Most of the work required to educate users happens at a much earlier stage of planning. Good bin placement and bin signage will help users work out how to use a PPR system, as will signage and messaging in other areas of the site not directly associated with bins.

Effective education interventions will help inform the public about PPR facilities and how to use them, as well as promoting recycling more generally. Local governments or property/business owners might also take the opportunity to promote themselves as part of any signage.

There could be an opportunity to involve school groups to link your project with the Victorian curriculum. To find out more, contact your local ResourceSmart AuSSI Vic coordinator whose details can be found at www.sustainability.vic.gov.au/www/html/3457-resourcesmart-aussi-vic.

It is preferable to have regular contact to share successes with situational stakeholders (those who operate in or have a stake in the site but are not directly involved in the PPR system). This is important to maintain their interest and potential involvement in the project as these stakeholders may distribute or host information about the PPR system's progress.

3.3 Launch a PPR system

A PPR system can be an opportunity for positive public relations and local media to promote the system and to educate the public about recycling and related topics such as litter, sustainability and personal responsibility.

The launch of a PPR system can be enhanced by the presence of a spokesperson (e.g. a councillor, property manager or a local personality) and provides photo opportunities for local media.

Holding a launch event will promote a PPR system and generate interest. It may require additional resourcing from the organisation's communications and marketing team to get the messaging right. PR opportunities include paid advertising to local media, use of social media, printed material (posters and brochures), eye-catching displays, testimonials and direct marketing.

A launch is a way to recognise and celebrate the work of all those involved in the project - to publicly thank stakeholders that helped in any way. If significant funds were involved, particularly from an external source, a public event offers the opportunity to publicly acknowledge financial backers.

A launch is more suited to sites with sufficient scale and large numbers of users to ensure a good turn-out.

A few weeks is required to organise a launch event (including media groundwork), and sufficient budget to match the scale of an event. A launch event should ideally be part of a larger media and promotions plan for PPR project.

4. Maintain and monitor

Once a PPR system is up and running, an ongoing program of maintenance, repairs and cleaning is required. Evaluating a PPR system is vital to understand if it is performing and whether any adjustments are required.

Processes for monitoring the state of the equipment itself should be in place via operational arrangements and contracts.

This is often a combination of contracted service levels, the council or land manager's own cleaning and maintenance staff and operations. It may even involve volunteers and club members.

Make sure maintenance and repair costs have been factored into the budget.

The maintenance and monitoring stage is based on three activities. The checklist below can be used to track progress.

Table 8: Maintain and monitor progress checklist

			✓ X Complete
Activity	Details		
4.1	Monitor the PPR system	Is there a schedule in place to monitor and maintain the PPR system?	<input type="checkbox"/>
4.2	Evaluate success	Is the PPR system making a difference?	<input type="checkbox"/>
4.3	Ongoing PPR promotion	Can the promotion of the PPR system continue as part of a broader sustainability commitment?	<input type="checkbox"/>

4.1 Monitor the PPR system

Regular audits and measurements allow the PPR system to be adjusted.

This can be as simple as regular visual bin inspections and gathering feedback and reports from cleaning staff and other service providers.

A successful PPR system may reduce the amount of waste in rubbish bins, and there may be a justification for changes to rubbish bin deployment and rubbish collection as a result. Table 9 provides a suggested PPR schedule.

Table 9: Suggested schedule for monitoring and maintaining a PPR system

Timing	Activity
One month after installation	Conduct a waste audit. Compare this to original waste assessment baselines.
During the first year	Maintain a regular inspection schedule to monitor the condition of bins and signage, and litter levels around bins. Ensure repairs are done immediately to keep bins looking of a high quality.
Annually	<p>Periodic research should include a waste audit at least once a year, and observing disposal behaviours to verify usage patterns.</p> <p>Time this with contract, operations and budget reviews if possible as this is the best opportunity to propose changes.</p> <p>After the first year sufficient data will be available for trend analysis and making useful adjustments to the PPR system, and in the training, education and communications that support it.</p>
Ongoing	<p>Always give feedback and congratulate others for the project's recycling achievements.</p> <p>Keep in touch with stakeholders and report progress to superiors and partners regularly.</p>

4.2 Evaluate success

Using the results from the regular review process, an evaluation of the performance of the PPR system can commence and adjustments can be made as required.

Celebrating successes and keeping stakeholders informed can maintain enthusiasm and interest in the project.

4.3 Ongoing PPR promotion

While a PPR system can be seen very simply as a mechanism to prevent litter and change disposal behaviours in a certain locality, it also represents broader environmental principles with an underlying message about sustainable waste management.

PPR offers a premise to promote and educate the public by way of a continuous campaign about the project success which can reinforce public support for further recycling improvements in the community.

Running a campaign

An effective campaign involves operations, communications and engagement. Table 10 lists suggestions for an ongoing PPR campaign.

Table 10: PPR campaigning

Involve	<ul style="list-style-type: none"> > Stakeholders help develop key messages and methods to promote and educate the public. > A PPR 'champion' promotes the project e.g. someone enthusiastic, articulate, and photogenic, at ease in public settings and ideally someone known to the community.
Tell	<ul style="list-style-type: none"> > Achievements reported to stakeholders and the organisation's media advisor and outlets. Regular reporting and announcements create opportunities for ongoing public education regarding the benefits of PPR and the reasons to support it. > Working with local schools to communicate to families in the local community.
Link	<ul style="list-style-type: none"> > Linking or associating the PPR project with other environmental initiatives e.g. analysing environmental campaigns run by local council and the environmental priorities of the organisation or property owner.

Case study 1: Sports clubs and grounds

The major PPR success factor for this case study was the willingness of sports clubs and members to adopt recycling practices and take ownership of the PPR system. This case study covers key factors for consideration when implementing PPR at sports clubs and grounds and draws on relevant council initiatives that encouraged PPR:

- > **Darebin City Council:** Cleaning Up Our Game (in partnership with Nillumbik and Whittlesea councils)
- > **City of Boroondara:** Public place recycling and education campaign for Boroondara parks and sportsgrounds
- > **Yarra City Council:** Good Clean Game

Cooperation

There are two levels of cooperation required at sports clubs:

- > **Attitudinal cooperation:** Club members, players and volunteers embrace recycling and the PPR system, possibly as an extension of what they do at home.
- > **Operational cooperation:** Club members follow procedures and schedules aligned with the wider collection and recycling service, and meet council's and external contractor's requirements e.g. for contamination levels.

The engagement effort

As a PPR project manager, engaging directly with sports club stakeholders is often only possible outside of business hours. Darebin Council trialled two engagement methods as part of the Cleaning Up Our Game PPR project:

- > **Direct engagement:** The council took a behaviour change approach to establish the PPR system in senior football clubs. This involved meeting and liaising with the clubs, promoting recycling to members and providing instructional materials. The council held two engagement and education days onsite at the four sports grounds. Promotion included signage and large billboards at entrances and boundaries, and radio ads timed for match days.
- > **Indirect engagement:** Junior clubs were given promotional materials, posters and signage and asked to distribute within the club and sticker their bins.

Darebin's PPR team said that the direct and indirect engagement methods were highly effective depending on the target audience and PPR site. An assessment of the club's culture will help estimate the degree of engagement needed for PPR to gain traction.

Rules of engagement

There are four key aspects to achieving successful engagement about PPR projects at sports clubs and grounds:

- > **Get attention:** The ideal time to introduce PPR and teach members and volunteers to operate the system (front and back of house) is just before the start of the sporting season. Once the sporting season starts waste management can become a low a priority with minimal opportunities for education or influencing practices.
- > **Utilise leaders and champions:** PPR is more likely to be successful when the sports club head and committee acknowledge the value of the initiative and actively promote the project within the club. Darebin's project highlighted the importance of even higher level relationships, in this case building a partnership with the Northern Football League peak organisation. While finding champions for the cause at any level in the club is not essential, it can help.
- > **Give the engagement time:** It takes time to influence people's attitudes and behaviours and for members to perceive the PPR system as part of general business, rather than an additional duty.
- > **Refresh the relationship:** Club committees often change their membership each year. Establishing relationships early with new members is essential and can mean fresh approaches to how a PPR system is managed.

Education and promotion

Sports events are an opportunity to reinforce PPR practices among club members, while also promoting recycling to the wider community of supporters. There are a range of engagement methods to educate clubs and spectators:

- > **Club communications:** Regular communication (in the form of posters, flyers or email updates) with clubs is essential to maintain momentum and provide support for the PPR project.
- > **Crowd communication:** Signage, billboard displays or posters informing and encouraging the crowd to use the PPR system.
- > **Broader communications:** To share the successes or learnings of a PPR system with the community a communications professional can advise on the appropriate channels that may include newsletter, newspapers, radio, social media or websites.

Operations tips

Important things to consider when planning the operations of a PPR system at sports clubs and grounds:

- > **Bin placement:** Bin position and configuration influence how well PPR systems capture recyclables. How well will the club do this? Do members understand the importance of pairing bins? Consider creating a bin placement guide for each ground to illustrate the correct configuration.
- > **Bin collection schedules:** Ensuring bins are available for collection is critical to an effective PPR system. Consider creating a collection calendar to display and use at the club.
- > **Frequency and number:** Collection frequency may need to alter depending on the sports event and training calendar, which can fluctuate at short notice. Check whether the council or contractor has the flexibility to change schedules to accommodate activity at the club.

The reliability of operations was pinpointed as the main area needing improvement for Yarra's PPR project, specifically the consistency of bin and signage placement, presentation and replacement practices, and maintenance of infrastructure.

Rosters, schedules, role assignments and good communications within the club, as well as between the club and council, can ensure the successful operations of a PPR system. PPR project managers can support the club by creating information and training materials to enable consistent and clear messaging about the project.

Lease agreements

Councils may consider including waste and recycling management requirements in club lease agreements. This puts an official stamp on the PPR project and motivates clubs to establish reliable procedures, making PPR a regular part of club business. However, this would not negate the need for project engagement, education and training.

Lease agreements can stipulate contamination levels, proper bin presentation and use, maintenance standards and schedules, and use regulatory incentives or disincentives as appropriate.



Clean Up Our Game bin mascot and signage.



Clean Up Our Game bins.

Photos courtesy of Darebin City Council.

Case study 2: Parks and reserves

PPR systems are commonplace in parklands and urban open spaces, as well as rural localities that attract holidaymakers, such as campgrounds and resorts. Some reserves are home to recreation centres, adding to human activity and influencing waste disposal patterns across the site.

Implementing PPR in reserves and open spaces has infrastructure and operational considerations, related mainly to waste and recycling collection access, bin and enclosure design as well as land management.

This case study focuses on common infrastructure considerations that can influence elements of a PPR project based on feedback from the following council's park and reserve project site:

- > **Frankston City Council:** Ballam Park
- > **Moreland City Council:** Coburg Lake Reserve
- > **Cardinia Shire Council:** Cardinia Shire Public Place Resource Recovery in five sites across the area including, Pakenham Tennis Centre, Sutherland Park and Emerald Lake Park.

Fit for purpose

To ensure a PPR system is suitable for the variety of park or reserve users and that materials will be disposed of, it is important to factor in the following infrastructure considerations:

- > **Prepare the site:** When planning a PPR system, give consideration to the state of current PPR infrastructure and to the placement of new bins. Cardinia Shire Council conducted bin repairs and replacements to ensure their bins were consistent to enable the public to easily identify and use.
- > **Bin suitability:** Understanding early on the type of bin or bin combination to install will save time and costs. After installing bin cages at Coburg Lake Reserve, the council found them to be unsuited to the waste profile of the site, especially around the picnic and BBQ area. Larger items such as two-litre drink bottles and bagged rubbish became litter. The solution was to replace the bin cages with 120 litre rubbish and recycling mobile bins and relocate to entry-exit points.
- > **Cigarette butt bins:** When planning a PPR system, clearly articulate the quantity and type of cigarette butt bins required so that this cost is accounted for upfront.
- > **Collector access:** Access to bins in parks and reserves can be an issue. In one of Cardinia's PPR parks, the collector's truck was too large to get to bin locations and posed a safety risk to reserve users. The solution was to build bin holds at locations accessible to trucks and end users. At another reserve, council laid an asphalt path to allow truck access, and this was an extra cost to the project.

Case study 3: Leisure centres

PPR at leisure centres is an excellent opportunity to communicate with a wide ranging audience about recycling and to divert significant amounts of waste into the recycling stream.

Over the years, City of Greater Dandenong has installed PPR systems in many of its major leisure centres, including the Dandenong Oasis Leisure Centre and Dandenong Basketball Stadium, and more recently Springers Leisure Centre and a newly redeveloped Noble Park Aquatic Centre.

This case study covers the key education, promotion and launch learnings from Springers Leisure Centre and Noble Park Aquatic Centre.

Education and promotion

Greater Dandenong used the following features to inform and educate leisure centre users about their new PPR system and how to use it effectively:

- > Posters with eye-catching colours and graphics spread across facility sites.
- > Bin signage using predominantly graphics to show recyclable items and waste products.
- > Multilingual communication that considered community demographics. Bin signs clearly titled 'recycling' or 'rubbish' and a selection of language translations beneath.
- > Taglines suitable to each facility:
 - Springers' 'Win, lose or draw - whatever the score - remember to recycle' and
 - Noble Park's 'Swim splash stretch or slide - remember to recycle'.

PPR system launches

To maximise audience reach and to raise the profile of the PPR project, Springers and Noble Park tied the launch of their PPR systems in with other major events:

- > Australia Day celebrations at the Springers Leisure Centre included raising a recycling flag and providing information about recyclable items at the community BBQ.
- > The official opening of the new Noble Park Aquatic Centre included roving performers engaging young people in a 'recycling game' which proved educational and popular.

Since the PPR system launches in early 2013, both leisure centres have kept contamination levels below 1% indicating that their approach to education and promotion was successful in guiding disposal behaviours.

Appendix 1: PPR Project Plan Checklist

The following checklist is a merge of the four separate checklists within the document under the research, design, implement and maintain and monitor steps. The checklist below can be used to track progress.

1. Research

	Activity	Details	✓ X Complete
1.1	Check site suitability	Is the site suited to PPR? If not, can it be improved to make it suitable for PPR?	<input type="checkbox"/>
1.2	Assess waste	How much waste and recycling is there? When do peaks occur? Are there sufficient recyclables to install a PPR system?	<input type="checkbox"/>
1.3	Map usage patterns	Is there a clear pattern of human activity and waste disposal behaviours?	<input type="checkbox"/>
1.4	Target recyclables	Which recyclables will be the initial focus and which will be introduced when a PPR system is up and running?	<input type="checkbox"/>
1.5	Explore alternative options to reduce waste	Are there other strategies to reduce the amount of waste in the area?	<input type="checkbox"/>
1.6	Engage stakeholders	Have stakeholders been identified and a stakeholder plan created?	<input type="checkbox"/>
1.7	Plan a PPR system	What collection and recycling services are available? Who will be responsible for maintaining and monitoring a PPR system?	<input type="checkbox"/>
1.8	Budget considerations	Have less obvious items and activities been factored into the budget?	<input type="checkbox"/>

2. Design

	Activity	Details	✓ X Complete
2.1	Map bin locations	Are bins visible and accessible at commonly accessed and convenient disposal points? Are there enough bins to cover the site?	<input type="checkbox"/>
2.2	Determine number, size and type of bin	Is there the right size and type of bin to collect anticipated quantities of waste and recyclables? Will permanent or mobile bins be used, or a combination of the two?	<input type="checkbox"/>
2.3	Consider end users	Does the PPR system take disability into account? Is communication across cultures or languages required? Are there any factors unique to the site in terms of user behaviour?	<input type="checkbox"/>
2.4	Designing for occasional events	Are there occasional events at the site?	<input type="checkbox"/>

	Activity	Details	✓ X Complete
2.5	Choose bin signage	What signage will be used on bins and around the site?	<input type="checkbox"/>
2.6	Choose bin openings	What bin openings are best suited to the waste profile of the site?	<input type="checkbox"/>
2.7	Other design considerations	Is the design safe, clean and durable?	<input type="checkbox"/>

3. Implement

	Activity	Details	✓ X Complete
3.1	Educate staff and volunteers	Are there policies and guidelines in place? Is there training for staff and volunteers?	<input type="checkbox"/>
3.2	Educate end users	Are the bins visible and accessible? Is signage easy to understand? Is there additional signage to explain PPR and promote recycling?	<input type="checkbox"/>
3.3	Launch a PPR system	Has local media been contacted and will there be a stakeholder launch event?	<input type="checkbox"/>

4. Maintain and monitor

	Activity	Details	✓ X Complete
4.1	Monitor the PPR system	Is there a schedule in place to monitor and maintain the PPR system?	<input type="checkbox"/>
4.2	Evaluate success	Is the PPR system making a difference?	<input type="checkbox"/>
4.3	Ongoing PPR promotion	Can the promotion of the PPR system continue as part of a broader sustainability commitment?	<input type="checkbox"/>

Appendix 2: Waste bin inspection sheet

Name of site _____ Date _____ Carried out by _____

Guidelines: Aim to inspect approximately 10% of the bins. Mark the location and number of the inspected bins on your map. Label the inspected bins with a sticker. Inspect the bins 2 – 3 times to ascertain the contents and contamination rates on varying occasions. Choose bins from different areas such as: kiosk/café/canteen; spectators viewing area; high traffic areas (walkways); entry-exit; food and drink area(s). Try to inspect more bins in areas of high use.

Waste Bin Location _____ Number _____ Time observed _____

Bin label	Size of bin	Level of contents	Main non-recyclable contaminants	Estimate % of contaminants
<input type="checkbox"/> Recycle	<input type="checkbox"/> 240L	<input type="checkbox"/> Estimate % full	<input type="checkbox"/> Food	<input type="checkbox"/> None
<input type="checkbox"/> Rubbish	<input type="checkbox"/> 120L	_____	<input type="checkbox"/> Plastic cups	<input type="checkbox"/> < 10%
	<input type="checkbox"/> Other		<input type="checkbox"/> Polystyrene cups	<input type="checkbox"/> 10-20%
	_____		<input type="checkbox"/> Wrappers	<input type="checkbox"/> 20-30%
			<input type="checkbox"/> _____	<input type="checkbox"/> Other
			<input type="checkbox"/> _____	_____

Waste Bin Location _____ Number _____ Time observed _____

Bin label	Size of bin	Level of contents	Main non-recyclable contaminants	Estimate % of contaminants
<input type="checkbox"/> Recycle	<input type="checkbox"/> 240L	<input type="checkbox"/> Estimate % full	<input type="checkbox"/> Food	<input type="checkbox"/> None
<input type="checkbox"/> Rubbish	<input type="checkbox"/> 120L	_____	<input type="checkbox"/> Plastic cups	<input type="checkbox"/> < 10%
	<input type="checkbox"/> Other		<input type="checkbox"/> Polystyrene cups	<input type="checkbox"/> 10-20%
	_____		<input type="checkbox"/> Wrappers	<input type="checkbox"/> 20-30%
			<input type="checkbox"/> _____	<input type="checkbox"/> Other
			<input type="checkbox"/> _____	_____

Waste Bin Location _____ Number _____ Time observed _____

Bin label	Size of bin	Level of contents	Main non-recyclable contaminants	Estimate % of contaminants
<input type="checkbox"/> Recycle	<input type="checkbox"/> 240L	<input type="checkbox"/> Estimate % full	<input type="checkbox"/> Food	<input type="checkbox"/> None
<input type="checkbox"/> Rubbish	<input type="checkbox"/> 120L	_____	<input type="checkbox"/> Plastic cups	<input type="checkbox"/> < 10%
	<input type="checkbox"/> Other		<input type="checkbox"/> Polystyrene cups	<input type="checkbox"/> 10-20%
	_____		<input type="checkbox"/> Wrappers	<input type="checkbox"/> 20-30%
			<input type="checkbox"/> _____	<input type="checkbox"/> Other
			<input type="checkbox"/> _____	_____

The data collected here will help identify the following:

- > The quantity of waste currently being generated at each site
- > The quantity of recyclable materials that is being lost to landfill
- > The effectiveness of the current waste management system

Appendix 3: Fact sheet - Assessing your waste - guidelines

Fact sheet

Assessing your waste – guidelines

Undertaking a waste assessment is a useful way to determine waste generation and costs. It is also an opportunity to identify issues, set benchmarks and improve on current practices to input into the development of your action plan.

You can determine how much waste your organisation produces via a desktop audit, a visual waste assessment or a physical waste audit.

Desktop audit

Desktop audits are useful to get an estimate of what is being wasted without having to trawl through a bin. Simply review purchasing records and receipts from your waste or recycling contractors to find out how much waste your organisation generates and the cost.

For example, office paper purchasing records will indicate number of reams and cost per annum. Estimate the amount of paper retained in archived or distributed documents. Subtract this amount from the amount purchased to get an indication of your waste paper generation per year.

The accuracy of results is dependant on the availability and detail presented in your records, and does not include items purchased outside of administrative processes.

Visual waste assessment

A visual waste assessment involves inspecting waste bins and skips to estimate the volume of each waste type in the bin (e.g. 30% cardboard, 40% plastic, 10% timber and 20% general waste). Most offices have standard waste streams and this method is usually sufficient to determine waste generation and waste type.

A visual inspection will also identify the success of any existing recycling programs. For example, it is easily identify any cardboard and paper in the general waste that could be recovered through the recycling system.

One of the limitations of a visual assessment is that it doesn't allow for compaction of the waste, which impacts on the accuracy of results. However it is less time consuming than a physical waste audit where everything is weighed.

Physical waste audit

A physical waste audit requires physically sorting, weighing and recording contents of bins/skips into categories. This audit is applicable for organisations needing accurate information or where waste streams are diverse and hard to visually separate.

Either audit all bins, or a representative sample, depending on time and labour constraints. Usually audits represent a 'snapshot in time' therefore care needs to be taken in extrapolating this information to a yearly basis.

Plan to do your audit at a time of year and using a sample that is a true representation of types and quantities of waste usually generated by your business. Take into account any factors that mean the amount or type is different from the norm.

Occupational health and safety precautions

Do not undertake a physical waste audit unless you have the appropriate protective equipment such as protective clothing, gloves and glasses. Be aware of needle stick injuries or glass cuts when handling waste, especially health care sector waste. However, sharps can be present in any waste stream.

It is also recommended that tetanus and hepatitis immunisations are up-to-date before undertaking any activity that requires physical handling of waste. Seek professional medical advice if required.

Physical audit checklist

Planning

- ☐ Determine which and how many bins are to be audited.
- ☐ Decide the best time period e.g. daily or weekly accumulation.
- ☐ Talk to cleaning staff and waste/recycling contractors about the audit.
- ☐ To get a true generation of waste generation – audit waste and recycling bins where possible (will also help determine the success of any recycling program).
- ☐ Ensure you have a cleanable, safe site to conduct the audit.
- ☐ Communicate audit time and place to all participants.
- ☐ Don't tell general staff the time of the audit as they may change their normal behaviour

Equipment

- ☐ First aid kit and access to phone in case of emergency.
- ☐ Recording sheets and pens (one per bin/skip) and a folder to keep them safe.
- ☐ Camera to record interesting findings.
- ☐ Safety glasses, protective clothing, water resistance footwear and heavy duty gloves.
- ☐ Sharps container.
- ☐ Bin liners or containers to sort waste into.
- ☐ Paper and pens to label containers.
- ☐ Scales to weigh sorted waste categories.
- ☐ Groundsheet.
- ☐ Stick and tongs to rummage through waste.
- ☐ Broom, mop and shovel for cleaning up.
- ☐ Disinfectant and water for cleaning.

The Audit

- ☐ Nominate lead auditor.
- ☐ Make sure every one is aware of OHS risks and first aid kit.
- ☐ No smoking on site.
- ☐ Audit one bin at a time.
- ☐ Nominate one person as note taker/photographer (They should not handle waste).
- ☐ Make sure units (kg/litres/volumes) and any other interesting factors are listed.
- ☐ Collate results on the waste assessment sheet.
Download the form at www.mwmg.vic.gov.au

Appendix 4: Crime Prevention Through Environmental Design (CPTED)

Source: International Security Management & Crime Prevention Institute

What is CPTED?

Crime Prevention Through Environmental Design or CPTED (pronounced 'septed') is a branch of situational crime prevention. Its basic premise is that the physical environment can be changed or managed to produce behavioural effects that will reduce the incidence and fear of crime, thereby improving in the quality of life, and enhancing profitability for business.

Like all situational crime prevention strategies, CPTED has as one of its primary aims to reduce the opportunity for specific crimes to occur. CPTED differs from traditional target hardening strategies in that the techniques employed seek to use environmental factors to affect the perceptions of all users of a given space - addressing not only the opportunity for the crime but also perceptions of fear on the part of those who may otherwise be victims.

Drawing heavily on behavioural psychology, CPTED concepts and strategies take advantage of the relationships that exist between people and their environments. The way we react to an environment is more often than not determined by the cues we are picking up from that environment. Those things that make normal or legitimate users of a space feel safe (such as good lighting), make abnormal or illegitimate users of the same space feel unsafe in pursuing undesirable behaviours (such as stealing from motor vehicles).

In practice, CPTED principles can be, and are, used in a wide range of contexts, from social planning through to urban design; from community safety to specific security risk management applications.

CPTED Three Key Strategies

CPTED builds on three key strategies: natural access control, natural surveillance and territoriality. Natural access control involves the use of symbolic and or actual barriers that restrict, encourage or channel the movement of people into, out of and/or within designated areas. These symbolic or actual barriers may take the form of changes in land elevation, gardens, ground markings, entrance ways, which clearly define border definitions and transitional zones of public to semi-private to private areas.

Natural surveillance consists of allowing those people who would normally be in a position to see or observe, the opportunity to see others. These people may be neighbours, users of the site or employees. Creating the opportunity to see may involve the provision of surveillance zones through trees and shrubs, increased and target directed lighting and building placement.

Territorial reinforcement is the maintenance of a sense of ownership of a given area by the community around it. Both 'natural access control' and 'natural surveillance' contribute to this. The area must look as though it is cared for and looked after. Territorial reinforcement may take the form of signs, celebrated entrances, rubbish removal and site maintenance. Increasing the use of the site by those groups in the community who then take on the role of voluntary custodians can also increase the sense of ownership of the site by the community.

CPTED Three-D Concept

The three CPTED strategies of natural access control, natural surveillance and territorial reinforcement are inherent in the Three-D concept.

The questions that need to be answered in respect to a specific space are:

- > Does the space clearly belong to someone or some group?
- > Is the intended use clearly defined?
- > Does the design provide means for normal users to naturally control the activities, control access and provide surveillance?
- > Does the physical design match the intended use?

One way to involve CPTED principles in community areas is through a three-step review process.

1. Designation: What is the intended use of the area?
What behaviour is allowed?
2. Definition: What are the physical limits of the area?
What are the borders between this area and public spaces?
Is it clear which activities are allowed where? What risks can be anticipated and planned for?
3. Design: Does the physical environment support the intended use safely and efficiently?

Using the 'Three Ds' to assess a space may reveal a conflict between the "Ds" - a conflict that should result in a modification. If a space has no designated purpose, is poorly defined, or is not properly designed to support and control the intended function, that space may generate crime and fear unless modifications are made. Thus, the challenge is to design a parking deck or position public restrooms that are not only functional, but also maximize the personal safety of legitimate users.

Once the three Ds have been considered, the space is assessed according to how well it supports territoriality, natural surveillance and natural access control. Natural access control and surveillance promote a greater sense of territoriality among users and a greater perception of risk in potential offenders. This may be accomplished with real barriers, such as fences, or with symbolic barriers, such as low-growing landscaping materials, elevation changes, or even changing the texture of the sidewalk.

Situational crime prevention

The process of risk assessment, planning and implementation to reduce crime is referred to as situational crime prevention. The basis of situational crime prevention is opportunity reduction. Opportunity, along with desire, a motivated offender and the skills and tools to commit the crime, are the ingredients necessary for a crime to occur. Opportunity reduction aims at making a potential target of attack inaccessible or unattractive and by making the attack itself dangerous or unprofitable for the offender.

Opportunity can be reduced by implementing measures designed to:

- > increase the risk associated with committing the act;
- > increase the effort required to commit/complete the act, and
- > reduce the reward associated with the act.

The underlying strategies of situational crime prevention are:

- > Target hardening - locks, window film, grilles, and computer locking mechanisms.
- > Environmental design (CPTED) - trimmed foliage, lighting, natural surveillance, fences, signs.
- > Electronic - alarms (detection devices, communication methods), CCTV.
- > Policies and Procedures - asset marking, equipment storage, equipment location, procedures that check that windows and doors have been locked and regular equipment audits.

The essential element of situational crime prevention aims to reduce the perceived opportunity to offend by increasing the apparent risk and thereby reducing the opportunity to commit the offence.

Sustainability Victoria
Level 28, Urban Workshop
50 Lonsdale Street Melbourne 3000
T 1300 363 744
E info@sustainability.vic.gov.au
sustainability.vic.gov.au

Sustainability
victoria

