

Victorian Litter Report 2007

**Submitted to
Sustainability Victoria**

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Executive Summary

The Victorian Government's *Sustainability in Action: Towards Zero Waste* (TZW) strategy is a ten year plan to reduce the amount of waste generated in Victoria, increase the amount of materials for recycling and reprocessing and reduce damage to our environment caused by waste.

A key target of the strategy is to reduce littering behaviour by 25% by 2014 compared to 2003 levels.

Progress towards the target is reported in the **Victorian Litter Report (VLR)** which uses Community Change's Clean Communities Assessment Tool (CCAT) to provide systematic and reliable information on litter prevention in the state and helps to guide programs at the local level by informing improvements in those factors influencing littering behaviour throughout Victoria.

The CCAT provides:

- > A littering behaviour rate derived from observations of people with waste to dispose of and indicates the number of people littering items expressed as a percentage of overall disposal actions (positive and negative).
- > A measure of litter prevention in public places, based on ratings of *location features that influence littering and bin use* (expressed as CCAT scores) including features like bin maintenance and servicing, infrastructure and landscaping.
- > A litter count of the number of littered items on the ground identifying clean areas and litter accumulation hot spots.
- > A measure of community satisfaction with litter management in public places.
- > Clear action oriented recommendations for change at both the community wide and individual location level.

The VLR 2007 reports data collected from early July to early October 2007. Assessments were conducted throughout 215 public place locations divided into 13 site types that generated 1,692 observations of disposal actions and 521 interviews. Outcomes are compared to benchmarks set in 2003 and 2005 and track changes in litter prevention efforts at the statewide, urban and regional levels, and according to site type and local government area.

Conclusions from outcomes contained in the 2007 Victorian Litter Report are:

1. **Litter prevention in public places** in 2007 was similar to 2005 (scores of 69/100 and 68/100 respectively). Although the ratings of location features that influence littering and bin use were higher than the 2003 baseline benchmark (64/100), scores were almost equal to a target of 70/100 and set the foundations for long term behaviour change.
2. The **2007 Victorian littering behaviour rate** of 31% did not meet a 'notional' TZW target which require progressive decreases in littering behaviour. Nevertheless, most Victorians (69%) continued to manage appropriate disposal of used items in public places and littering in 2007 was similar to 2005 (30%).
3. In contrast to 2003 and 2005, littering was more common in **urban** than **regional** locations. This was also reflected in CCAT scores, where regional locations had shown improvement in those public place features influencing littering, whereas urban locations had not changed since 2005.
4. **Site type** also remains an important determinant of littering behaviour with waterfront areas and public buildings continuing to maintain low littering rates. The 'events' site type was a standout success in 2007, from demonstrating the highest rates of littering behaviour at 2003 baseline to the lowest in 2007. Transport and easements continue to be problem areas in relation to littering behaviour and litter on the ground and malls (particularly in urban areas) showing clear progressive deterioration in disposal behaviour since 2003.
5. Whilst key in terms of litter prevention efforts, location features are not the only determinant of community wide disposal behaviour, with education campaigns and enforcement strategies also playing a crucial role.

Although these strategies require tailored assessment methods not lending themselves to the regular and structured monitoring of the VLR, the 'events' site type is an interesting case. In the absence of progressive changes in the CCAT, the striking improvement in littering behaviour rates suggests that the low level of litter on the ground, along with the implementation of large scale awareness campaigns and local activities for events such as the 2006 Commonwealth Games have led to behavioural improvements. Presumably, location management lessons learned during such events have also assisted in this process. It seems apparent though, that this effect is specific to 'events' locations and did not generalise to other site types which received similar levels of attention during events such as the 2006 Commonwealth Games.

6. Littering rates varied considerably between **local government areas** with some areas demonstrating very positive disposal behaviour, for example Hume City Council and City of Ballarat and some not, for example Manningham and to a lesser extent, City of Melbourne and City of Greater Dandenong. City of Greater Dandenong also demonstrated very high litter counts and a low CCAT score.
7. **Litter on the ground** was at higher levels than both 2003 and 2005 and did not meet notional targets. Whilst a high litter count can point to lack of clean up in a location, it was possibly the result of inclement weather conditions present during 2007 data collection and other factors. Its limitations as an outcome measure have been well discussed, with litter counts being used as a proxy measure only when behavioural data is unavailable. Nevertheless, litter on the ground was far more evident in urban areas, particularly easement and transport locations.
8. Revised litter counts (excluding dog poo and gum) showed cigarette litter to be the **most common type of litter on the ground** in both regional and urban locations and, for most (but not all), local government areas and site types.
9. **Community satisfaction with litter management** and assessments of general location cleanliness show there is general satisfaction with efforts at litter prevention and management. However, community sentiments of cleaning practices and bin servicing and proximity are more polarised, indicating that a considerable portion of the community would prefer that more be done to raise standards.

On the basis of these conclusions, the following actions are recommended:

1. Formulate and **implement the forthcoming Victorian Litter Strategy** as a matter of urgency including a re-examination of TZW behaviour change targets in light of realistic timelines required for preparation and implementation of the Victorian Litter Strategy informed by consistent data collection and outcomes derived from the Victorian Litter Report.
2. Consider the **renewal of a large scale litter awareness campaign**, but not in isolation from local efforts and programs as part of the new Victorian Litter Strategy. Ensure local prevention efforts are well integrated with large scale campaigns.
3. At the local level, **examine outcomes for individual locations**, learning from those locations performing well, instigating a strategic, systematic and measurable approach to litter prevention, but ensuring local features, character, culture and community expectations are taken into account.
4. Ensure that all prevention programs **set well defined behavioural and attitudinal targets**, similar to those included as part of the cigarette litter prevention program implemented prior to the introduction of the smoking ban in outdoor licensed premises in 2007. Design, implement and evaluate programs directly in accordance with targets and direct program resources accordingly.
5. Consider the extension of previous holistic approaches to litter prevention to **re-ignite gains made in previously successful campaigns**, for example from events such as the 2006 Commonwealth Games and the 2007 smoking bans initiative. Examine how the lessons learned from these efforts might be positively exploited in an active, focussed manner, such as extending butt litter outcomes from smoking premises to other site types.

6. **Implement a program of active support to local governments and other key stakeholders** where the outcomes and location profiles from the VLR are presented, explained and used to inform program development identifying local successes as well as problem areas. Ensure that this process is interactive with participants receiving a detailed briefing with a number of opportunities to ask questions and provide feedback, recognise achievements, and provide non-judgmental support, particularly to local government areas where social disadvantage exists.
7. As a priority **consider specific location improvement and clean up programs** for transport locations and easements, most of which remain litter hot spots.
8. Consider the **integration of VLR outcomes with information from local councils** on the role of enforcement, perhaps identifying those local government areas where such activities are working well in conjunction with other less punitive measures as part of a holistic approach to litter prevention.
9. Continue to **monitor statewide litter prevention performance** and link to a stepwise approach to change targets (TZW littering behaviour), and integrate notional targets for litter prevention (CCAT scores), litter counts and community satisfaction levels.
10. Continue to **evaluate individual litter prevention programs** and consider development of a regular process for integrating these findings with broader VLR results, in order to better understand the relative contribution of specific efforts and the broader picture prevention program.

The Victorian Litter Report 2007

Progress Towards Zero Waste Littering Target

The Victorian Government's *Sustainability in Action: Towards Zero Waste* (TZW) strategy is a ten year plan to reduce the amount of waste generated in Victoria, increase the amount of materials for recycling and reprocessing and reduce damage to our environment caused by waste.

A key target of the strategy is to reduce littering behaviour by 25% by 2014 compared to 2003 levels.

Measurement

The **Victorian Litter Report (VLR)** provides information on littering and litter in public places. It provides systematic and reliable information on litter prevention in the state and helps to guide programs, ensuring there is less waste and more efficient use of resources by providing recommendations on how to prevent litter more effectively at the local level and facilitate improvements in those factors influencing littering behaviour throughout Victoria.

Progress towards the target of reduced littering behaviour is measured using Community Change's Clean Communities Assessment Tool (CCAT), with 2007 assessments conducted throughout 215 locations divided into 13 site types generating 1,692 observations and 521 interviews.

The CCAT provides:

- > A littering behaviour rate derived from observations of people with waste to dispose of and indicates the number of people littering items expressed as a percentage of overall disposal actions (positive and negative).
- > A measure of litter prevention in public places, based on ratings of *location features that influence littering and bin use* (expressed as a CCAT score out of 100) includes features like bin maintenance and servicing, infrastructure and landscaping.
- > A litter count of the number of littered items on the ground identifying clean areas and litter accumulation hot spots.
- > A measure of community satisfaction with litter management in public places.
- > Clear action oriented recommendations for change at both the community wide and individual location level.

Outcomes from the Victorian Litter Report 2007 are compared to benchmarks set in 2003 and 2005 and track changes in litter prevention efforts at the statewide, urban and regional levels, and according to site type and local government area.

Methodology

The Victorian Litter Report was conducted from early July to early October 2007¹ and followed standardised CCAT data collection procedures used in the 2003 and 2005 benchmarks (described in detail in Appendix A).

A more detailed description of CCAT site types, sample selection procedures and summaries of CCAT outcomes for each location is contained in Appendix B.

All location profiles completed as part of the VLR 2007 have been presented as a supplement to this report, *Victorian Litter Report 2007 Individual Location Profiles*.

¹ The assessment in 2007 was conducted over a longer period of time than previous assessments due to issues in scheduling data collection to avoid wet and wintry days when few people were likely to be present in locations.

Litter Prevention in Victoria

People’s littering behaviour can be influenced by numerous factors, including the characteristics of public place locations themselves. Public places that are clean, safe and user friendly promote participation of the community (and visitors) in efforts to care for and maintain the location, as well as engendering a sense of ownership and community pride. In contrast, public places that are dirty and poorly cared for attract not only litter, but are more likely to contain graffiti and other characteristics promoting the likelihood of anti-social behaviour and threaten community safety.

Local efforts at litter prevention are measured by ratings of design, maintenance and features of public places that are within the control of their owners including bin maintenance and servicing, and other infrastructure and landscaping that influence littering, bin use, litter accumulation and litter management.

Litter prevention is measured by the CCAT through systematic ratings of features of locations that are converted to a CCAT score out of 100. Higher scores indicate that these elements are working well together, encouraging users to keep areas clean and facilitating community ownership and engagement. Lower CCAT scores indicate the need to improve those features likely to facilitate a reduction in littering behaviour such as repairing and cleaning damaged or poorly maintained bins and infrastructure, or adjusting maintenance routines and servicing schedules to reduce overflowing bins.

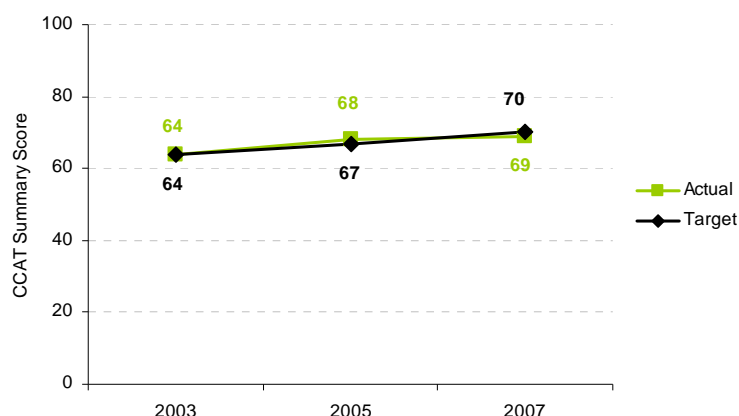
The litter prevention score in the VLR is the primary outcome measure for measuring progress towards the TWZ target. Improvements in litter prevention scores set the foundations for long term behaviour change and reduced littering.

Litter Prevention in Victoria

Figure 1 shows CCAT summary scores for all locations assessed throughout Victoria, which were combined and arithmetically averaged to provide a summary score for litter prevention in public places at a statewide level and also shows performance relative to the ‘target’ for litter prevention.

A Summary CCAT score of 69/100 was found for the state of Victoria indicating a moderate overall level of clean in 2007, an increase in litter prevention performance in public places compared to 2003-2005 levels.

Figure 1 VLR Litter Prevention Performance (Summary CCAT Score) 2003, 2005 and 2007



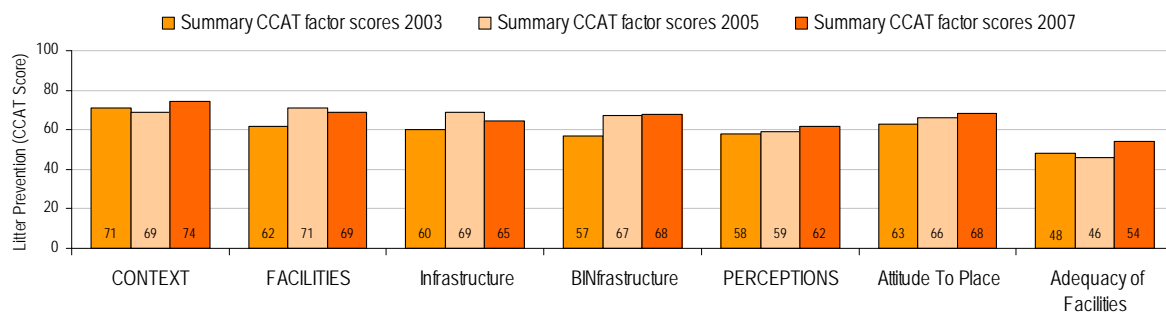
- The 2007 litter prevention CCAT score of 69/100 almost meets the TZW target of 70/100
- Litter prevention in 2007 was similar to the 2005 level of 68/100 but higher than the 2003 baseline level of 64/100.

CCAT Components Contributing to Litter Prevention in Victoria

The CCAT assesses the components contributing to the litter prevention score and provides a means to track improvements in the features of public places that long term contribute to reduced littering (Appendix A contains details of the component factors). Ratings for elements within each component are combined and converted into CCAT score out of 100.

Figure 2² shows scores for each CCAT component in 2007 – Context, Facilities (Infrastructure and BINfrastructure), and Attitudes and Perceptions (public attitudes to place and the adequacy of disposal facilities) compared to 2003 and 2005.

Figure 2 VLR Statewide Summary CCAT Component Factor Scores



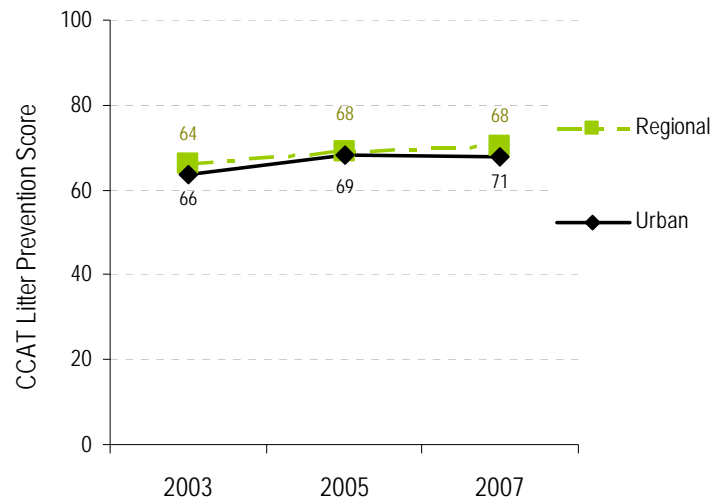
- All CCAT three component factors - *Context*, *Facilities* and *Attitudes and Perception* - showed improvement since 2003 baseline laying the foundations for improved littering behaviour in Victoria.
- *Context* scores indicated that in 2007, public places showed improvement in their general cleanliness, sense of community belonging and safety, and were reasonably free of graffiti and dumping.
- In the case of *Facilities*, 2007 score increases were due mainly to progress with *BINfrastructure*, which was the most improved sub-factor category since baseline (exceeding a notional BINfrastructure target of 62), reflecting local improvements in bin design, positioning and servicing. *Infrastructure* scores, although indicating better maintenance, presentation and cleanliness of street furniture, landscaping and boundary markers compared with 2003 baseline, had deteriorated somewhat since 2005. At an anecdotal level, this was evident in local Location Profiles, where a number of VLR recommendations made in 2005 had still not been acted upon. Infrastructure improvements perhaps need to receive similar levels of attention to those of *BINfrastructure*, in order to improve ratings.
- In the case of *Community Perceptions and Attitudes* in 2007, progressive score increases since 2003 for *Attitudes to Place* indicate the positive opinion Victorians continue to have in relation to their public places. As in previous benchmarks, community perception of the *Adequacy of Disposal Facilities* was again not commensurate with independent CCAT assessor ratings (not shown in the figure above), indicating that those using public places are inclined to make harsher judgements of disposal facilities than are warranted. Nevertheless, the score showed improvement since 2003 and 2005, indicating a level of awareness regarding actual improvements made.

² CCAT scores have been presented on a 100-point scale. Note that primary factors (in upper case) comprise the sub-factor scores shown in lower case but do not represent an average of the two sub factor scores. For example, the Perceptions and Attitudes score (in upper case) comprises all ratings items for sub-factors Attitudes to Place and Adequacy of Facilities but does not represent a numerical average of the two sub-factor total scores.

Litter Prevention in Regional and Urban Locations

Figure 3 shows 2007 CCAT summary scores for urban and regional locations assessed throughout Victoria.

Figure 3 Summary CCAT Scores for Urban and Regional Locations 2003, 2005 and 2007



- In 2007, a summary CCAT of 68/100 was recorded for urban locations, with a score of 71/100 for regional locations. A notional target for urban locations was 70/100, with regional locations almost meeting a notional target of 72/100.

CCAT Components Contributing to Litter Prevention in Regional and Urban Areas

Figures 4 and 5 show CCAT summary scores for each CCAT component for all locations in urban and regional Victoria in 2007.

Figure 4 Urban Summary CCAT Component Factor Scores 2003, 2005 and 2007

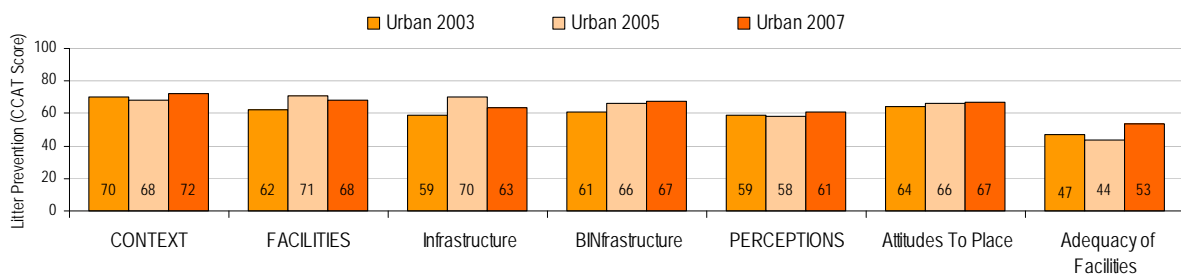
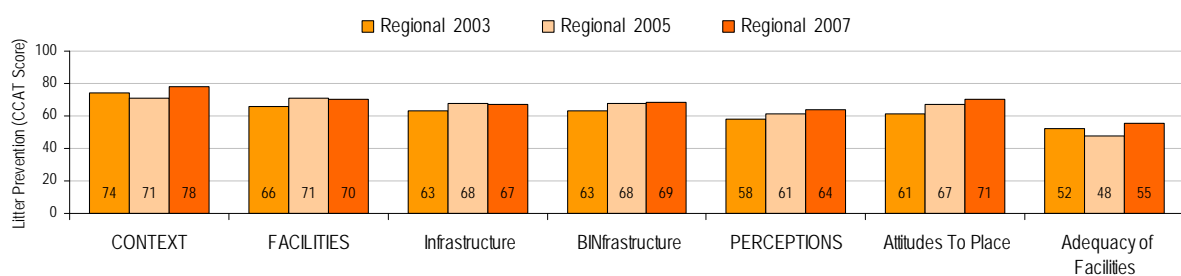


Figure 5 Regional Summary CCAT Component Factor Scores 2003, 2005 and 2007

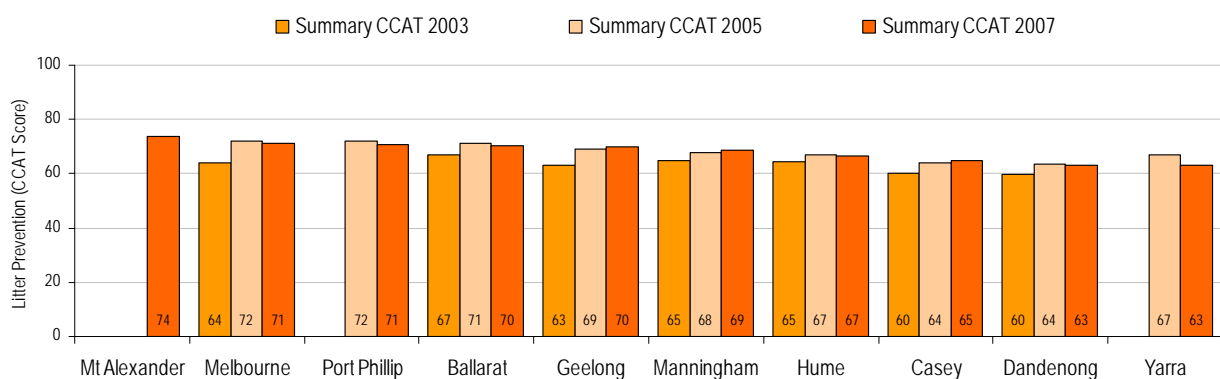


- Compared to the 2003 baseline, all sub-factor outcomes showed some improvement, for both urban and regional locations.
- *Context* scores indicated that in 2007, public places showed improvement (particularly in regional locations) in their general cleanliness, sense of community belonging and safety, and were reasonably free of graffiti and dumping.
- As mentioned in the total summary data above, in the case of *Facilities*, 2007 score increases were due mainly to progress with *BIN* infrastructure, in both urban and regional locations. As also described above, *Infrastructure* scores, although indicating better maintenance, presentation and cleanliness of street furniture, landscaping and boundary markers compared with 2003 baseline, had deteriorated somewhat since 2005. This was more evident in urban locations, where at an anecdotal level, a number of VLR recommendations made in 2005 Location Profiles had still not been acted upon. The process of improvement needs to be ongoing, with attention paid to consistent maintenance of existing facilities as well as updating and/or installing new infrastructure commensurate with any changes in location requirements.
- Whilst improvements in 2007 *Community Perceptions and Attitudes* scores were evident for both urban and regional locations, there were some differences in the degree of improvement in the two component factors – *Attitudes to Place* and *Adequacy of Disposal Facilities*. A higher degree of improvement in *Attitudes to Place* was evident for regional locations (an improvement of 10 points since 2003 baseline) compared to urban places (an improvement of 3 points). Community satisfaction with the *Adequacy of Disposal Facilities* however, was more apparent for urban locations (an improvement of 6 points since baseline) compared to regional places (an improvement of 3 points). This suggests that community members demonstrated a general awareness of BIN infrastructure improvements (as reflected in assessor ratings) and that very positive attitudes to place are likely to yield further positive attitude increases as improvements continue to be made.

Litter Prevention in Local Government Areas

Figure 6 shows CCAT summary scores for litter prevention in local government areas throughout Victoria.

Figure 6 Summary CCAT Scores for Local Government Areas 2003, 2005 and 2007



- Local government areas with 2007 Summary CCAT scores clearly exceeding the statewide average of 69 were Mt Alexander (74), Melbourne (71) and Port Phillip (71).
- Those areas with 2007 Summary CCAT scores clearly below average were Yarra (63), Dandenong (63) and Casey (65). All other local government areas demonstrated scores close to or at average levels.

- For those local government areas with 2003 baseline comparisons, all had improved since baseline, but there had been very little improvement since 2005. Four areas had shown a slight decline since 2005, but Yarra demonstrated a larger decline of 4 points and the equal lowest CCAT score.

CCAT Components Contributing to Litter Prevention in Local Government Areas

Table 1 shows the CCAT summary scores for each CCAT component for the various local government areas.

Table 1 Local Government Area Summary CCAT Component Factor Scores 2007

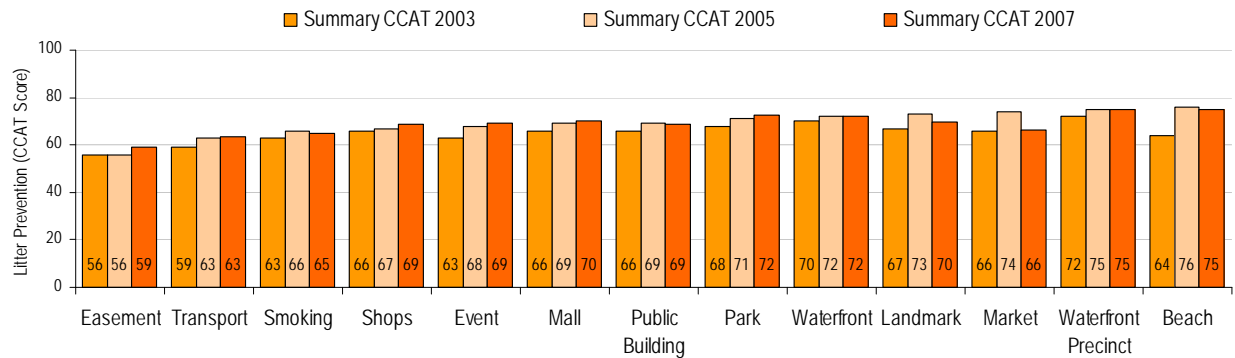
Local Governments	SUMMARY	CONTEXT	FACILITIES	Infrastructure	BINrastructure	PERCEPTIONS	Attitude to Place	Adequacy of Facilities
Yarra	63	72	63	59	54	52	65	36
Dandenong	63	65	65	60	65	56	63	46
Casey	65	69	65	61	61	59	65	52
Hume	67	70	68	60	67	60	66	52
Manningham	69	75	68	64	67	63	70	54
Geelong	70	79	69	66	65	63	71	53
Ballarat	70	74	71	67	74	63	68	56
Port Phillip	71	78	71	65	73	66	70	61
Melbourne	71	76	72	67	73	64	68	59
Mt Alexander	74	83	73	70	74	70	74	65

- The lowest council Summary CCAT score for City of Yarra appeared to be mainly due to a very low *Facilities* score (63), comprised of both a low *Infrastructure* score (59) and *BINrastructure* score (54). This was also reflected in the lowest council area score for community perception of *Adequacy of Disposal Facilities* (36) indicating that respondents were very aware of deficiencies in these location features.
- The next lowest Summary CCAT score in the Dandenong area, was due primarily to its *Infrastructure* (60) and *Context* scores (65). This indicates that while *BINrastructure* ratings were only slightly below average, the general cleanliness, sense of community belonging and safety, graffiti and dumping were below average, as was the maintenance, presentation and cleanliness of street furniture, landscaping and boundary markers.
- The highest council Summary CCAT score for Mt Alexander was the result of extremely positive outcomes for *all* CCAT sub-factors, which were the highest of all other council areas.
- The next highest Summary CCAT scores were evident for Melbourne and Port Phillip, due mainly to above average performance in *BINrastructure* and a corresponding improvement in community perceptions of the *Adequacy of Disposal Facilities*.

Litter Prevention in Site Types

Figure 7 shows CCAT summary scores for litter prevention in different site types throughout Victoria.

Figure 7 Summary CCAT Scores for Site Types 2007



- The highest 2007 Summary CCAT scores were for beaches (75) and waterfront precincts (75), well above the statewide average of 69.
- The lowest 2007 Summary CCAT scores were for easements (59), transport areas (63) and smoking sites (65). Greater attention to those location features influencing littering behaviour is required for these locations which have not performed well in all three benchmark periods.
- All site types showed improvement compared to 2003 baseline, except markets which were unchanged. With the exception of markets (and to a lesser extent, landmarks) the ranking from lowest to highest was the same as the previous 2005 benchmark.
- Most site types were at similar levels to 2005 (within 1 point either side) however markets showed quite a decline from 74 in 2005 to 66 in 2007 (back to 2003 levels). Compared to 2005, some improvements however were evident for easements (3 points) and shops (2 points).

CCAT Components Contributing to Litter Prevention in Different Site Types

Table 2 shows the CCAT summary scores for each CCAT component for the different site types.

Table 2 Site Type Summary CCAT Component Factor Scores 2007

	SUMMARY	CONTEXT	FACILITIES	Infrastructure	BIInfrastructure	PERCEPTIONS	Attitude to Place	Adequacy of Facilities
Easement	59	65	57	55	46	56	67	41
Transport	63	63	66	57	68	56	64	46
Smoking	65	69	67	61	69	57	65	46
Market	66	74	68	58	71	56	62	47
Shops	69	71	70	63	72	63	67	57
Public Building	69	78	66	67	55	63	70	55
Event	69	84	69	68	58	58	67	46
Landmark	70	78	69	69	63	64	70	56
Mall	70	75	71	66	73	62	67	55
Waterfront	72	78	72	67	71	67	71	62
Park	72	79	73	70	75	65	72	56
Beach	75	84	75	70	76	68	68	69
Waterfront Precinct	75	82	76	71	77	67	73	60

- The three site types demonstrating the highest Summary CCAT scores – beaches and waterfront precincts – all showed considerably higher than average scores for *Context*, *Facilities* (both *Infrastructure* and *BINrastructure*) and community perceptions of *Adequacy of Disposal Facilities*. Attitudes to Place were also highest for waterfront precincts compared to all other site types.
- Conversely, the three site types demonstrating the lowest Summary CCAT scores – easements, transport areas and smoking sites – all showed considerably lower than average *Context*, and *Infrastructure* scores, as well as community perceptions of the *Adequacy of Disposal Facilities*. This indicates more effort is required to be made in the general cleanliness of these locations, building sense of community belonging and safety, reducing graffiti and dumping, as well as improved maintenance, presentation and cleanliness of street furniture, landscaping and boundary markers.
- In easements *BINrastructure* ratings were particularly low, either due to a lack of adequate bins or none being provided and the community perceptions of the poor standard of BINrastructure matched the CCAT assessor ratings and indicated attention to improving bins and servicing of easements ought to be a priority.
- *BINrastructure* scores for transport and smoking sites were relatively good, with reasonable *Attitudes to Place* for these site types although the Adequacy of Facilities was rated poorly by the community.
- On the whole, this seemingly complex picture illustrates that community members have a positive attitude to most public places in Victoria, but when a need for improvement in *Infrastructure*, and cleanliness, sense of community, safety and graffiti is evident, this will tend to be expressed as dissatisfaction with disposal facilities, even when such facilities maybe adequate.

Littering Behaviour

Observations of disposal actions are the most effective indicator of community littering and bin use, avoiding reliance on self-report measures influenced by social desirability, where there is a frequent mismatch between what people *say they do* with what they *actually do*.

When sample sizes are large enough to provide robust indicators of littering (and conversely bin use) a **littering behaviour rate** can be calculated and expressed as a percentage, representing littering behaviours as a proportion of overall disposals (positive and negative). Higher measures of littering rates indicate more people are littering rather than using bins.

The aim of litter prevention programs is to reduce the littering rate to as low a score as possible. The **community littering behaviour** rate is compared to a notional TZW target of 25% improvement by 2014³.

Littering in Victoria

In 2007, 1,692 observations of disposal actions recorded in 215 locations⁴ throughout the State of Victoria identified 31% of people to have littered and 69% to have disposed of used items appropriately by using bins as shown below in Table 3 and Figure 8.

Table 3 Comparisons of Littering in Victoria 2003, 2005 and 2007

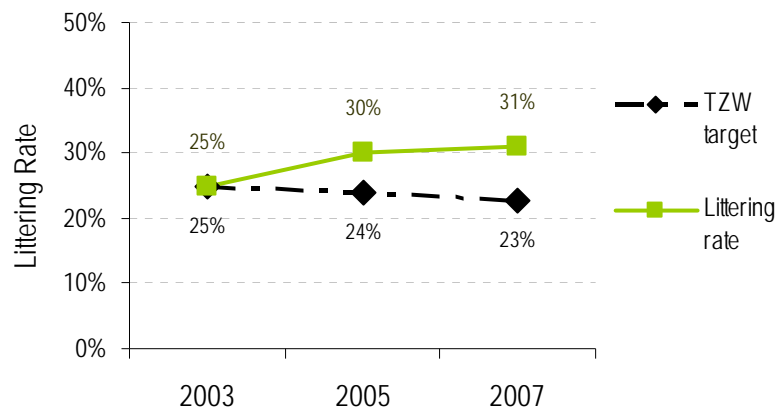
Benchmark Year	Number		Behaviour Rate	
	Locations	Observations	Bin Use	Littering
State of Victoria 2003	263	685	75%	25%
State of Victoria 2005	247	858	70%	30%
State of Victoria 2007	215	1,692	69%	31%
TZW 2007 Target ⁵	-	-	77%	23%

³ Notional annual TZW targets represent an incremental improvement compared to baseline (i.e. an increase in CCAT factor scores)

⁴ Very high numbers of observed disposal actions were recorded in 2007 despite the winter weather. They were partly the result of slight increases in location assessment times due to minor expansion of BIN infrastructure assessments for butt bins and the scheduling (where possible) of data collection on 'warmer' winter days.

⁵ VLR littering behaviour is compared to TZW targets that represent an incremental and linear improvement from baseline to 25% reduction in litter rate by 2014 (i.e. litter prevention program are expected to produce a lower littering rate each year).

Figure 8 Statewide Littering Rate 2003, 2005 and 2007

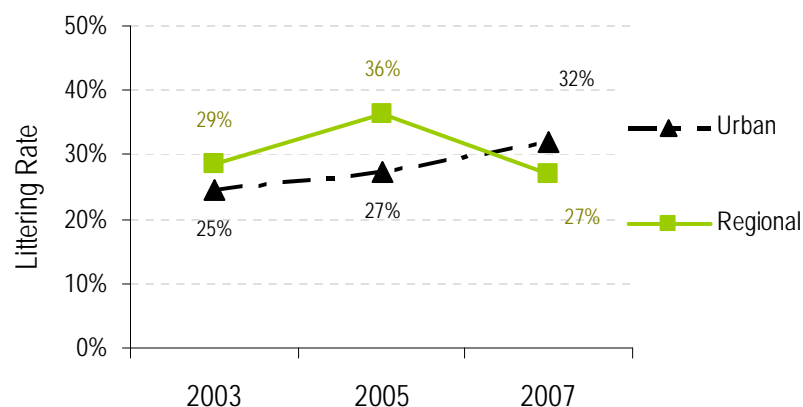


- In 2007, the rate of observed littering behaviour was maintained at a similar level to 2005 (at 31% and 30% respectively, both above the 2003 baseline) rather than decreasing as targets required.
- Littering behaviour levels throughout Victoria in 2005 and in 2007 did not meet TZW target levels by 6% in 2005 and 8% in 2007.
- In 2007, most Victorians (69%) continued to manage appropriate disposal of used items in public places and behave in an environmentally responsible manner, however the deterioration in bin use and higher rates of littering evident in 2005 (compared to 2003 baseline) continued in 2007.

Regional and Urban Littering

In 2007, the observation sample sizes in both regional and urban areas were large (297 and 1,395 respectively) with associated TZW targets of 26% (regional littering) and 23% (urban littering). Figure 9 summarises outcomes for littering behaviour in regional and urban locations since 2003.

Figure 9 Comparisons of Urban and Regional Littering Rates 2003, 2005 and 2007



- In 2007, in contrast to both 2003 and 2005, littering was more common in urban locations, accounting for almost one in three disposal actions.
- Compared to the 2003 baseline, 2005 urban littering behaviour had increased by 2% and by 2007, 5%. In contrast, regional littering behaviour had increased considerably in 2005 (by 7%) but fell by 9% in 2007, almost reaching the 26% TZW target level. In 2007, the urban-regional difference between littering

behaviour rates was almost 5%, indicating people in regional public places were more likely to use bins than their urban counterparts.

- The trend for urban areas indicates the need for an increased focus on behaviour change and litter prevention programs inside the Melbourne metropolitan area.

Littering in Local Government Areas

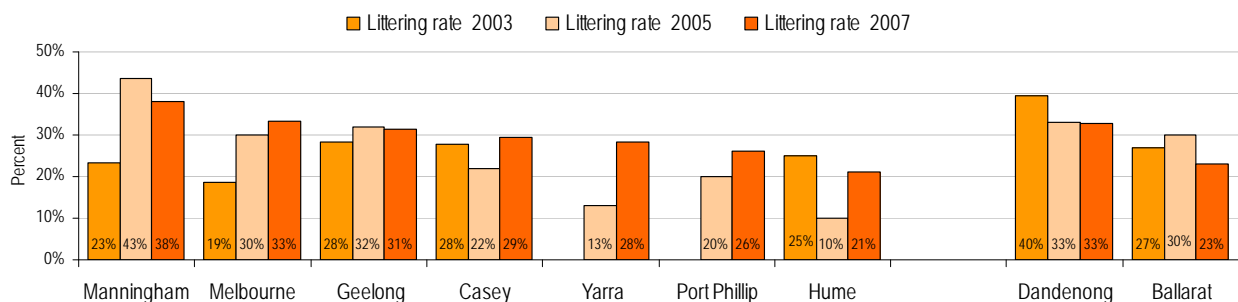
Littering behaviour and bin use were examined according to local government area to check progress with litter prevention and promote recognition of achievements.

Table 4 and Figure 10 summarises littering behaviour rates in local government areas throughout Victoria from 2003, 2005 and 2007. Littering behaviour rates appear only for those areas where sample sizes were statistically sufficient to provide a meaningful indicator.

Table 4 Littering in Local Government Areas 2003, 2005 and 2007

Local Governments	2003			2005			2007		
	Locations	Observations	Littering	Locations	Observations	Littering	Locations	Observations	Littering
Manningham	13	30	23%	15	23	43%	15	50	38%
City of Melbourne	53	288	19%	50	370	30%	48	810	33%
City of Greater Geelong	52	74	28%	40	106	32%	41	143	31%
City of Casey	15	43	28%	22	49	22%	22	126	29%
City of Yarra				13	39	13%	12	53	28%
City of Port Phillip				14	30	20%	13	69	26%
Hume City Council	10	16	25%	17	41	10%	17	95	21%
Dandenong	22	43	40%	18	57	33%	18	192	33%
City of Ballarat	27	52	27%	9	18	n/a	19	139	23%
Mt Alexander							10	15	n/a

Figure 10 Littering Rates in Council Areas 2003, 2005 and 2007



- Overall, the cities of Hume and Ballarat demonstrated relatively *low littering behaviour rates* with a large majority using bins to dispose of used items. Although both council areas had low littering rates compared to other areas, Ballarat had shown improvement (reduced littering) since baseline whereas Hume demonstrated an increase in littering.
- Overall, 2007 *littering behaviour rates were highest* in Manningham, City of Melbourne and City of Greater Dandenong where more than one third of disposal actions involved littering.

-
- Compared to baseline (or to 2005 if no 2003 baseline had been established), a trend for an increase in *littering behaviour rate* was evident for the City of Melbourne, City of Port Phillip, Hume City Council and City of Yarra.
 - *Littering behaviour rates* were reasonably stable for City of Greater Geelong between 2003, 2005 and 2007.
 - City of Greater Dandenong showed an *improvement in littering behaviour* since 2003 baseline, but this had not changed since 2005, with littering at a relatively high level overall.
 - Improvements in City of Casey evident in 2005 had dissipated with littering back to 2003 baseline levels. Although an improvement was evident in Manningham (compared to 2005), littering remained well above 2003 baseline levels.

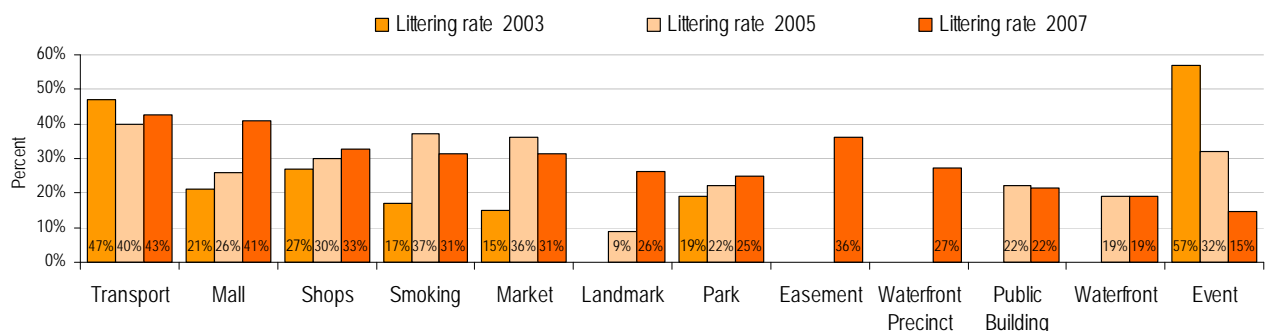
Littering and Site Types

Littering behaviour and bin use were also examined according to site type, as summarised in Figure 4.

Beaches, easements and waterfront precinct site types had insufficient numbers of behavioural observations in 2003 and 2005 and are not shown in Figure 11. While observations are shown for easements and waterfront precincts in 2007, there were insufficient numbers again for beaches, not surprising considering the inclement weather conditions during the data collection period (see Appendix B for details).

The 2007 littering behaviour rate for easements was 36% and for waterfront precincts, 27%.

Figure 11 Littering Rates in Site Types 2003, 2005 and 2007



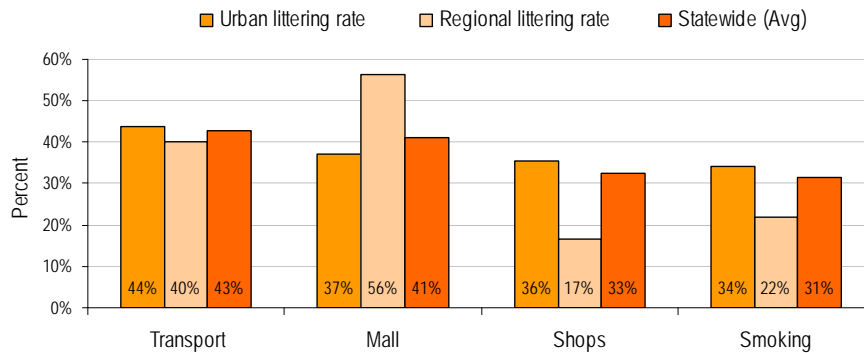
- Site types demonstrating *low littering behaviour rates* in 2007 were events (15%), waterfront areas (19%) and public buildings (22%). Waterfront areas (19%) and public buildings (22%) have shown consistently positive behaviour in both 2005 and 2007. More dramatic though, was the events site type. In 2003, at events, more people were observed littering than binning items, with a high littering rate of 57%. By 2007, this has shown a marked decline to 15%, to make 'events' the best performing site type of all, indicating the positive effects of increased focus on litter prevention strategies, incorporating a broad based holistic approach.
- Site types showing *high littering behaviour rates* in 2007 were transport areas (43%), malls (41%), easements (36%) and shops (33%). Transport sites have continued to be problem areas, consistently demonstrating high rates of littering behaviour from 2003, 2005 and 2007, with higher than average levels also evident for transport easements. Malls and shops both showed a trend for decline in disposal behaviour, with steady increases in littering behaviour rates from 2003, 2005 and 2007. The increase is more dramatic in malls, however, with an increase of 15% from 2005 to 2007 alone.
- The 2007 littering behaviour rates for parks and landmark areas were reasonably low (25% and 26% respectively), however parks have shown an incremental increase in littering behaviour over the 2003, 2005 and 2007 period, with littering behaviour at landmarks jumping dramatically from a low 9% in 2005 to 26% in 2007. The 2007 rate for waterfront precincts was also reasonably low (27%).
- The 2007 littering behaviour rates for smoking sites and markets was equal to the overall site type average (31%). A similar profile was evident for both site types where dramatic increases in littering behaviour from 2003 to 2005 had pulled back somewhat in 2007, although did not return to low 2003 levels.

Site type differences in 2007 littering behaviour were also examined according to whether they were in an urban or regional area. Sufficient numbers of behavioural observations were available for four site types⁶ - transport, malls,

⁶ To qualify, the number of observations needed to be greater than 30, which is often difficult to achieve in regional areas and in beach site types during winter.

smoking sites and shops which have been contrasted to the statewide average in Figure 12 (see Appendix B for details of observations in locations).

Figure 12 Littering Rates in Urban and Regional Site Types 2007



- The littering behaviour rate at malls was considerably higher for regional areas compared to their urban counterparts (a difference of 19%), with more than half of those observed in regional malls littering their items.
- In contrast, the littering behaviour rate at transport sites, smoking sites and shops was higher in urban areas than regional areas. This difference was particularly evident for shops, where the littering rate for urban locations showed a difference of 19%; for smoking sites the difference was 12%.
- Transport areas remained a problem area for both urban and regional sites with littering rates of 44% and 40% respectively.

Items of Litter

Litter counts measure the number of littered items in public places in Victoria. Using a standardised approach, the amount of litter present in each location is assessed over a 48m² area including ideally, a bin and furniture or other infrastructure. Litter counts may be influenced by the number of people littering and the number of people in public places which increases pressure on clean up schedules, however the measure is also influenced by a lack of clean up, weather conditions such as wind and rain and the adequacy of litter containment.

In 2007 the litter count methodology was refined to enable improved comparison of the factors over which councils can have direct influence in litter prevention policies and to provide meaningful comparison to earlier benchmarks.

Refinements include: (1) removal of poo and chewing gum (2) 'other' now includes hazardous litter, for example syringes; medical litter, for example bandaids; and commercial litter, for example trolleys. Data from 2003 and 2005 have been adjusted to reflect these changes.

Effective litter prevention is associated with reductions in litter items found on the ground but while litter counts are useful to build the picture of litter accumulation in public places, the littering behaviour rate is considered an accurate outcome measure of success in efforts at prevention. Litter counts in the VLR are compared to notional targets representing the level of expected change using the TZW 'equivalent' of 25% improvement by 2014⁷.

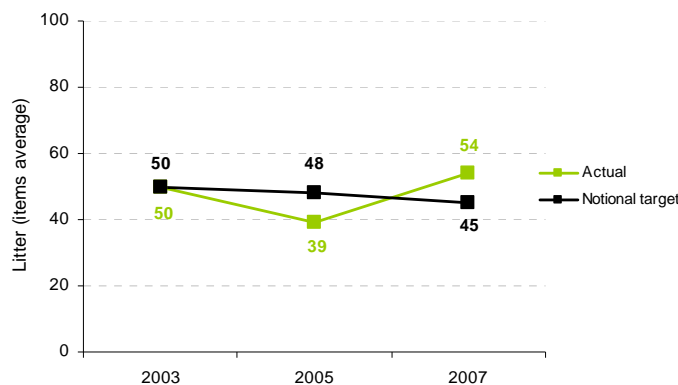
Litter in Victoria

Table 5 and Figure 13 show the number of littered items found in locations throughout Victoria in 2003, 2005 and 2007. Notional litter count reduction targets for 2007 have also been included.

Table 5 Statewide Litter Counts 2003, 2005 and 2007

Benchmark Year	Number		
	Locations	Items Total	Items Average
State of Victoria 2003	209	10,408	50
State of Victoria 2005	247	9,535	39
State of Victoria 2007	215	11,496	54
Notional 2007 Target	-	9740	45

Figure 13 Litter in Victoria 2003, 2005 and 2007



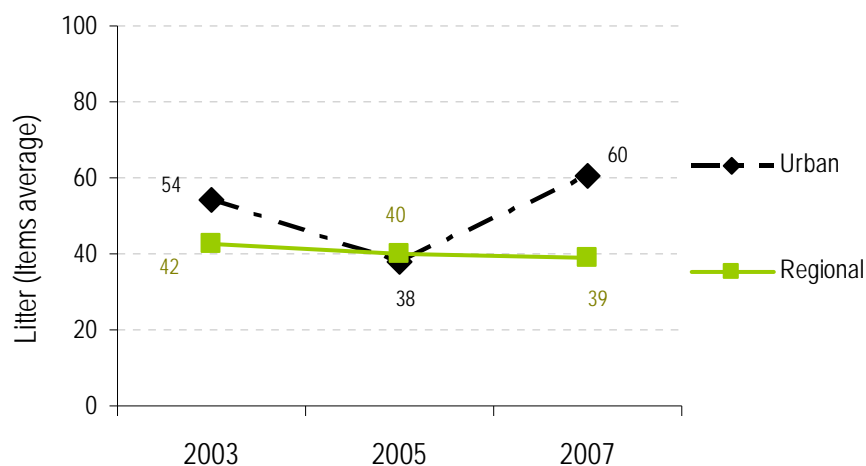
⁷ Notional annual TZW targets represent an incremental improvement compared to baseline (i.e. an decrease in litter counts)

- Litter counts levels throughout Victoria in 2007 averaged 54 items per location, above 2007 notional TZW target levels by an average of 8 items per location.
- Compared to 2003 baseline, the reduction in the number of littered items on the ground evident in 2005 (where notional targets were met) was not evident in 2007. Not only did litter count levels fail to meet targets, but the number of littered items on the ground had increased since 2003.
- Although this appears to be a somewhat puzzling result, it should be noted (as previously mentioned) that litter counts are not a particularly reliable outcome measure and should be used as an indicator only when behavioural data is not available. Whilst a high litter count can point to a lack of clean up in a location, it may also be the result of weather conditions (very inclement during the 2007 data collection period) and other factors. For example, increased numbers of people moved outdoors in smoking locations due to the introduction of smoking bans in licensed premises in 2007 may (1) have resulted in more littered butts on the ground even in the presence of a reasonably good littering behaviour rate and (2) put more pressure on venues to maintain outdoor clean up with no commensurate changes in staffing levels or clean up routines. In any case, littering behaviour outcomes are considered to be a far more accurate indicator of success in efforts at prevention.

Litter in Regional and Urban Areas

Figure 14 summarises litter count outcomes for regional and urban locations for 2003, 2005 and 2007. The 2007 notional target for urban litter was 49 and for regional litter, 39.

Figure 14 Statewide Urban and Regional Comparisons of Litter Counts 2003, 2005 and 2007

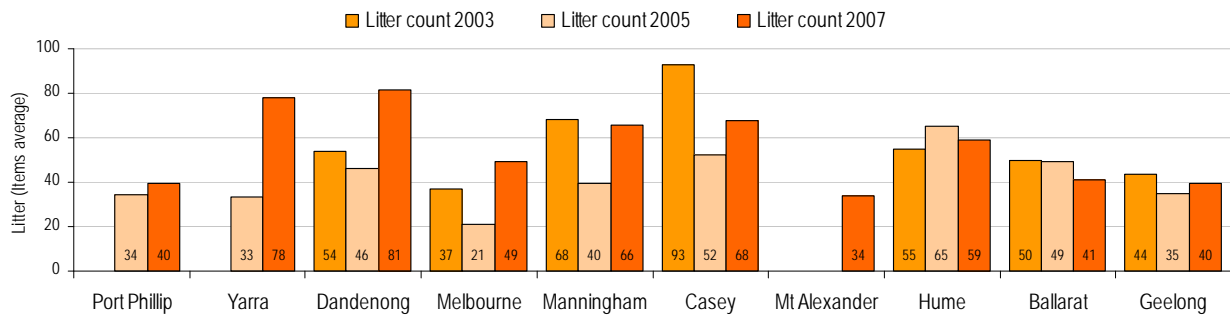


- In 2007, the average number of littered items on the ground was greater in urban locations (average 60 items) than for those in regional areas (average 39 items). This difference, also evident at 2003 baseline, was of greater magnitude in 2007.
- The notional target of 49 items for 2007 was clearly not met in urban locations. In contrast, regional locations were extremely close to meeting the 2007 notional target level of 39 items.
- Efforts at clean up and containment of used items appear to be operating at reduced levels in urban locations in 2007, notwithstanding the comments on the limitations of litter counts made in the previous section.

Litter in Local Government Areas

Figure 15 summarises litter count averages for local government areas throughout Victoria from 2003, 2005 and 2007.

Figure 15 Litter Counts in Council Areas 2003, 2005 and 2007

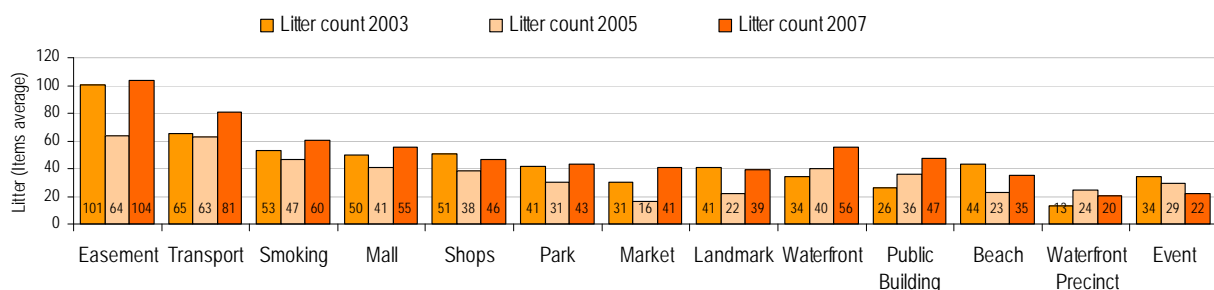


- Overall, the cities of Mt Alexander, Port Phillip, Geelong, Ballarat and Melbourne demonstrated comparatively *low litter count averages*, with relatively few littered items on the ground. Mt Alexander was the only council area to exceed the 2007 notional target (39 for regional locations). Both Ballarat and Geelong nevertheless demonstrated a *lower level* of littered items than during the 2003 baseline period, although the level for Melbourne had *increased* since that time.
- Overall, *high litter count averages* were evident in Dandenong, Yarra, Casey and Manningham, all exceeding the urban average of 60 items per location and clearly exceeding 2007 notional targets. However, locations in Dandenong and Yarra were far *more* littered than at 2003 baseline, with Casey *less* littered and Manningham at *similar levels* to 2003.
- A *reasonably stable level of litter on the ground* was evident for Hume over the 2003, 2005 and 2007 period, with the 2007 count at the overall average level.

Site Types and Litter

Litter counts were also examined according to site type, as summarised in Figure 16.

Figure 16 Litter Counts in Site Types 2003, 2005 and 2007



- Site types demonstrating a comparatively *low level of litter on the ground* in 2007 were waterfront precincts (average of 20 items), events (22), beaches (35), landmarks (39), markets (41), parks (43), shops (46) and public buildings (47). Of these, 'events' was the only site type to demonstrate progressive improvement in litter on the ground since 2003, perhaps reflecting increased focus on prevention campaigns in these areas such as the Commonwealth Games in 2006. As mentioned earlier, events was also the best performing

site type for littering behaviour and had undergone marked improvement since 2003. Other site types showing absolute improvement since baseline (but not progressive improvement) were beaches, landmarks and shops. Litter on the ground had increased since baseline though, for waterfront precincts, markets, parks, and public buildings.

- Site types showing a comparatively *high level of litter on the ground* in 2007 were easements (104), transport (81), smoking (60) and malls (55). Easements and transport locations continue to be the most littered site types, in 2007, 2005 and at 2003 baseline. As previously mentioned, transport locations also demonstrated high levels of littering behaviour. These problematic site types continue to require urgent and sustained attention in terms of efforts at prevention.
- The level of litter at smoking sites had increased since 2003, although the introduction of the new smoking ban in licensed premises in 2007 which brought people outdoors to smoke, has presumably increased the total number of butts available for disposal at these sites, even in the presence of improved disposal behaviour and BIN infrastructure.
- Malls have also shown a more modest increase in littered items since 2003 and 2005.

Items in the Litter Stream

During litter counts, items of litter found on the ground are identified and tallies for each item group are used to measure the relative contribution of item types to the litter stream. The higher the contribution of the item type to the litter stream, the more likely it is to be targeted as an area for focussed litter reduction efforts. For example, cigarette butt litter has long been the major item group contributing to litter counts in public places and in recent years has received particular attention in targeted programs. A full list of items assigned to each item type is shown in Appendix C.

Litter Composition in Victoria

Figures 17, 18 and 19 show the composition of littered items found in locations throughout Victoria in 2003, 2005 and 2007. With dog poo and chewing gum excluded from the data, cigarette litter was the most common item in litter count totals for 2003, 2005 and 2007.

Figure 17 Littered Items 2003

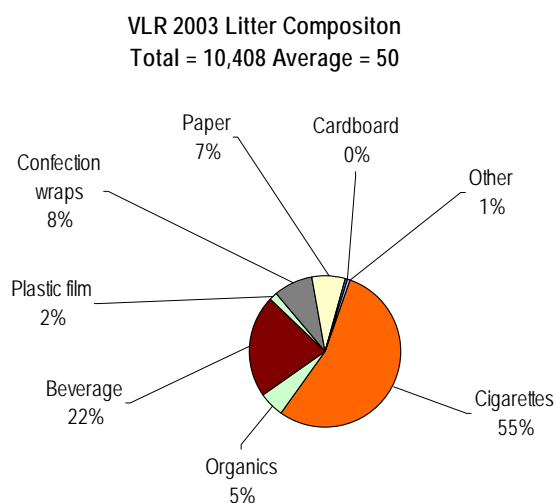


Figure 18 Littered Items 2005

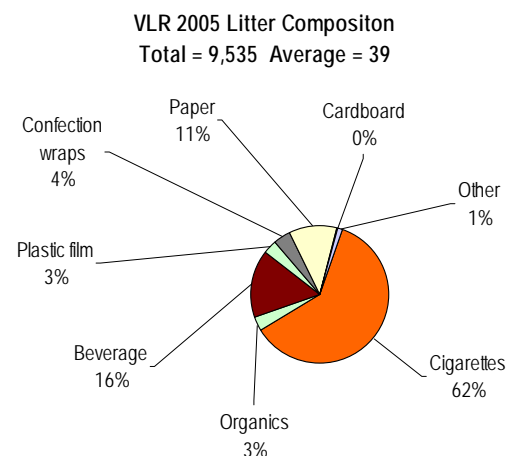
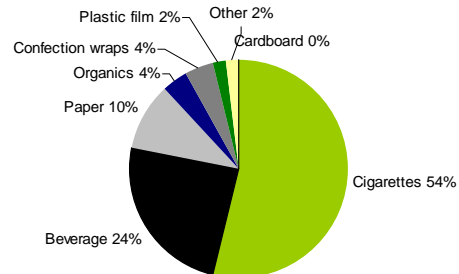


Figure 19 Littered Items 2007

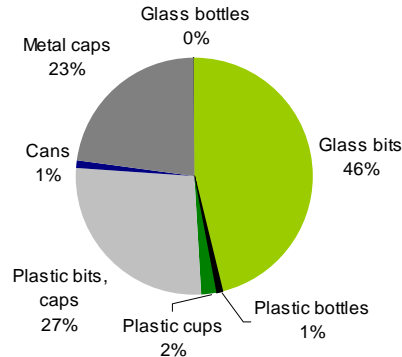
VLR 2007 Litter Composition Total = 11,496 Average = 54



In 2007, the most common item evident in litter counts was cigarette litter (54%), followed by beverage items (24%) including – glass bits (11%), plastic bits (7%), metal caps (6%). The remaining item types found littered were paper (10%), organics (4%), confection wraps (4%), plastic film (2%), 'other' (2%) and cardboard (shown as '0%') accounting for less than 1% of the items found littered in Victoria.

The composition of beverage items found littered is summarised in Figure 20 which shows that almost half (46%) of all beverage items found littered in 2007 were broken pieces of glass while a quarter of beverage littered items were plastic caps and bits (27%) and metal caps (23%).

Figure 20 Composition of Beverage Litter - Littered Items 2007



- By far the most common item evident in litter counts was cigarette butts, accounting for over a half of all items for 2003, 2005 and 2007. In all three assessments, the next most common item type was beverage items. In 2005, beverage items were 16% (glass bits 7%), and at baseline 2003, beverage items were 22% (glass bits 12%).
- The relative consistency of the composition of items found littered on the ground throughout Victoria provides clear priority targets for the development of litter abatement programs. Programs have been undertaken to reduce particular item types such as cigarette litter, particularly since the introduction of the smoking ban in licensed premises in 2007, but such programs need to be sustained and extended to locations other than licensed premises.
- It should be noted that larger item types such as bottles and cans are more visible for clean up, whereas butts may often be excluded from regular cleaning programs (for numerous examples see the individual

Location Profiles). This build up of old and new butt litter clearly has some impact on litter count item type totals, again highlighting some of the difficulties associated with using litter count methods.

Litter Composition in Regional and Urban Victoria

Figures 20 and 21 summarise the composition of litter on the ground for urban and regional locations in 2007.

Figure 21 Urban Items 2007

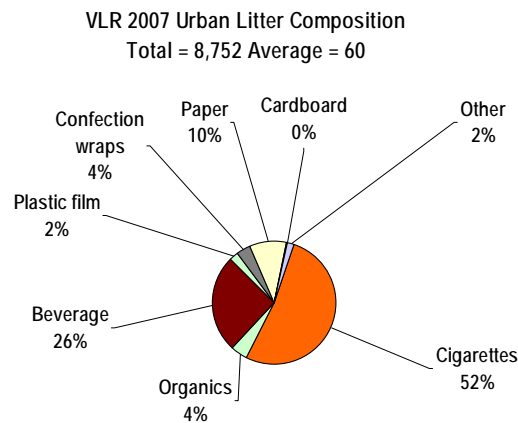
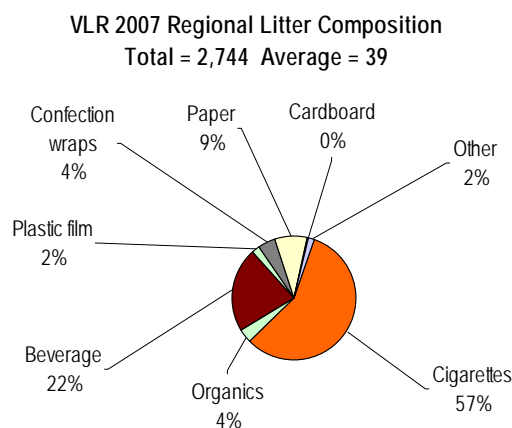


Figure 22 Regional Items 2007

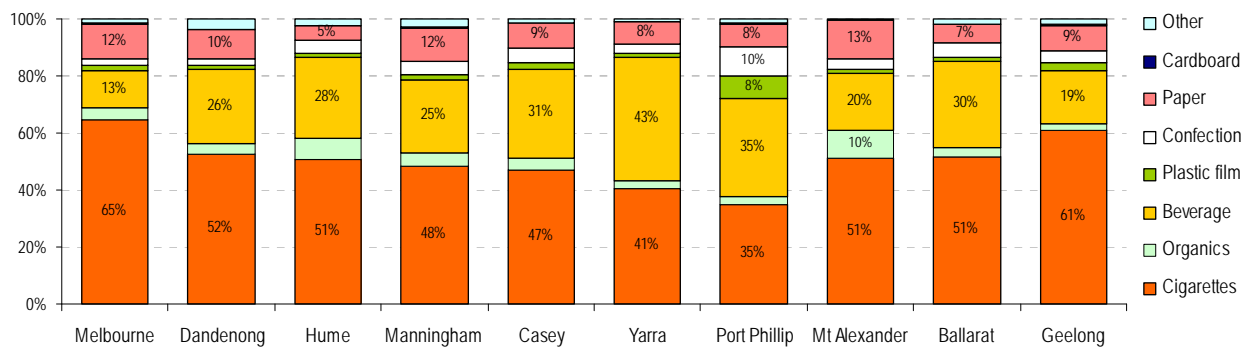


- The three most common types of items littered on the ground were the same for urban and regional locations, with cigarette butts accounting for more than half of all items on the ground (52% for urban and 58% for regional), followed by glass bits (12% for urban and 11% for regional) and paper (10% for urban and 9% for regional).
- The most common type of littered item on the ground (cigarette butts) was more evident in regional locations (58%) than urban locations (52%) although whether this is because they were more frequently littered or the result of less effective clean up remains unclear.

Litter Composition in Local Government Areas

Figure 22 summarises the composition of types of litter on the ground for local government areas throughout Victoria in 2007. It should be noted that for ease of reading (given the 10 council areas to be included in the chart), beverage related items (eg, glass bottles and bits; plastic cups, bottles and bits; metal caps and cans) have been combined.

Figure 23 Composition of Littered Items in Council Areas 2007

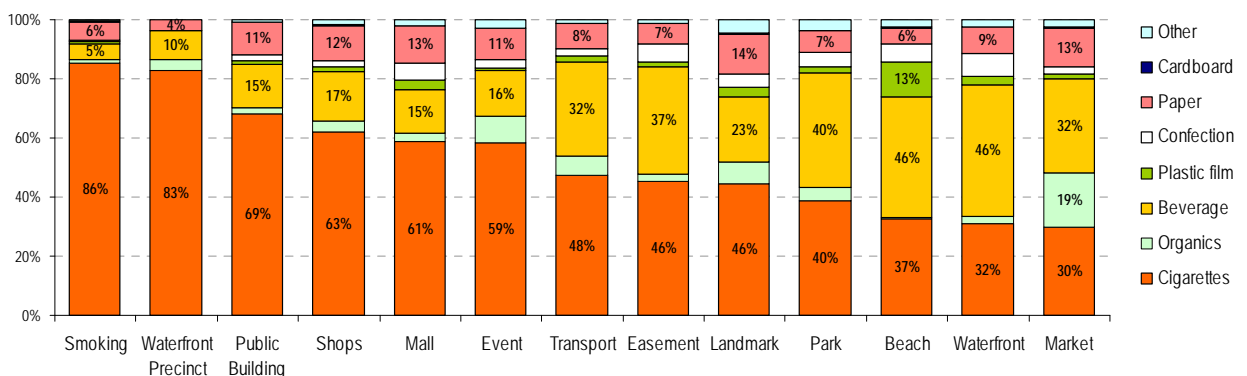


- The top three types of litter on the ground were the same for all council areas – cigarette litter, beverage items and paper, with the exception of Port Phillip where confectionery wrappers were the third most common item, accounting for 10% of items counted. Also, Mt Alexander demonstrated a relatively high proportion of organic littered items (10%), although as previously mentioned, Mt Alexander demonstrated the lowest average number of littered items on the ground compared to all other council areas.
- The cities of Melbourne and Geelong demonstrated the greatest number of cigarette butts proportional to other types of littered items, with all other council areas below the total average of 54%. As previously mentioned however, both these council areas demonstrated lower than average amounts of litter on the ground overall, suggesting that a focus on cigarette litter may yield positive change in view of the high littering *behaviour* rate evident in Melbourne and the fairly unchanging profile apparent in Geelong.

Site Types and Litter Composition

Figure 23 summarises the composition of types of litter on the ground for site types throughout Victoria in 2007. It should again be noted that for ease of reading (given the 10 council areas to be included in the chart), beverage related items (eg, glass bottles and bits; plastic cups, bottles and bits; metal caps and cans) have been combined.

Figure 24 Composition of Littered Items in Site Types 2007



- Not surprisingly, the vast majority (86%) of littered items on the ground in smoking locations were cigarette butts. Although a similarly high *proportion* of cigarette butts (83%) were evident in waterfront precincts, as previously mentioned, this site type was very clean with low levels of litter on the ground. Public buildings also continue to demonstrate high proportions of butts, similar to outcomes in 2005.
- Transport and easement locations demonstrated a *proportion* of cigarette litter somewhat lower than the average (54%), however as previously mentioned, compared to other site types, they had (by far) the most litter on the ground. Furthermore, transport locations showed the highest littering behaviour rate, with easements third highest. As described in previous VLR reports, these site types continue to require urgent and individualised attention in relation to prevention efforts including clean up.

Consulting Victorians on Litter

Demographic Profile of Survey Respondents

Community members in Victorian public places were consulted about their views on litter as part of the CCAT survey conducted in all locations where people were present and where those approached agreed to be interviewed. In 2007 the rate of people declining to be interviewed was higher compared to earlier benchmarks total however the sample size is large enough to provide a valid indicator of community sentiments with 521 respondents participating in surveys throughout 215 locations.

Statewide, survey sample sizes were robust enough to enable reporting of demographic comparisons between urban and regional locations as shown in Table 4.

Gender and Age

The gender of respondents participating in 2007 surveys is shown in Table 4 below.

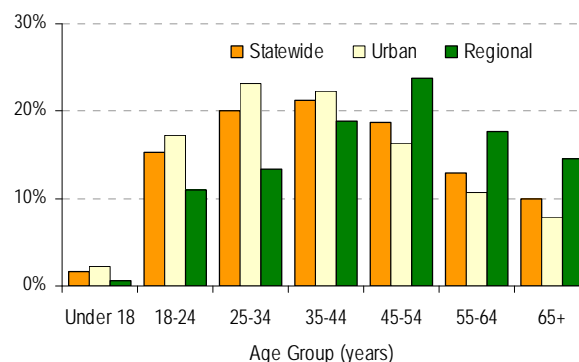
Table 6 Community Surveys - Gender and Age Groups

Year of Benchmark	Men	Women	Total	Percent Female
Statewide 2003	343	402	745	54%
Statewide 2005	491	507	998	51%
Statewide 2007	240	281	521	54%
Urban 2007	172	185	357	52%
Regional 2007	68	96	164	59%

- In 2007, slightly more women than men were surveyed, with slight difference in the ratio of men to women in public place locations in urban and regional areas with women being more prevalent in regional areas.
- As was the case in previous benchmarks, women were somewhat more likely to wish to participate in an interview, particularly in regional locations. The difference between the number of men and women surveyed did not appear to be associated with any practical differences or trends in the survey data.

The age group of respondents participating in 2007 surveys is demonstrated in Figure 24 below.

Figure 25 Age Groups in Sample Locations 2007



- The majority of those surveyed in 2007 were aged less than 45 years, similar to previous benchmarks.

- Also as in previous benchmarks, people in regional public place locations tended to be somewhat older than those in urban places.

Education and Employment

In 2007, the highest level of education achieved by respondents is shown in Figure 25, with employment categories included in Figure 26 below.

Figure 26 Education Profile 2007

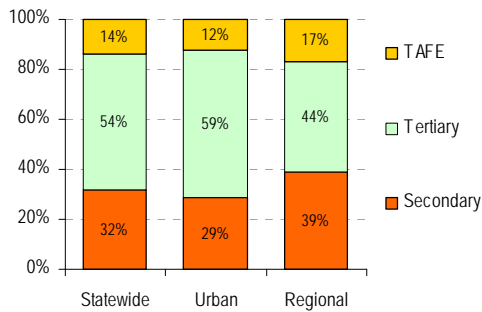
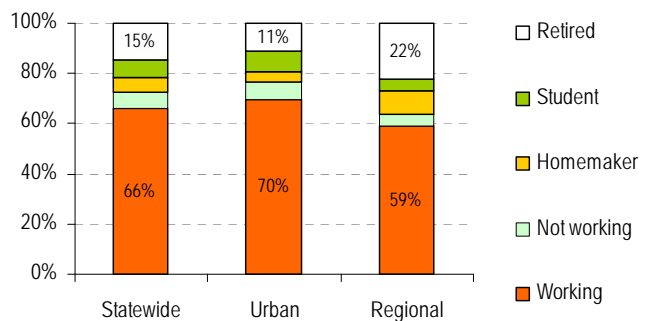


Figure 27 Employment Profile 2007

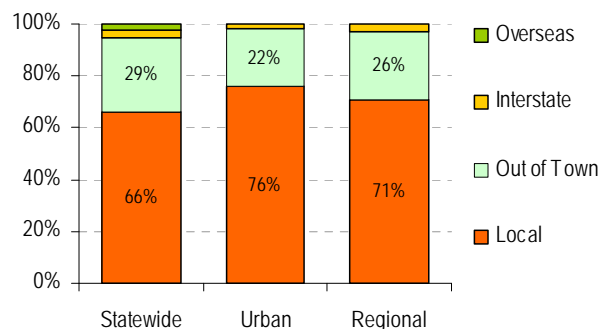


- Education and employment profiles showed the typical respondent to have some form of tertiary education and to be working, both in urban and regional locations.
- Urban survey respondents were more likely than regional respondents to have a tertiary education background.
- In relation to employment, urban respondents were more likely than regional respondents to be working, with those retired more likely to be in regional locations.

Place of Residence

The place of residence of respondents participating in 2007 surveys is shown in Figure 26 below.

Figure 28 Place of Residence Profile 2007



- Similar to previous benchmarks, the large majority of those surveyed considered themselves local to the area where the interview was conducted (66%), followed by those from out of town (29%). Respondents in regional locations though were more likely than those in urban areas to be locals, and less likely to be from out of town.

In summary, the VLR 2007 demographic profile indicated that most of those interviewed were local to the area, under 45 years old, employed, with a tertiary education.

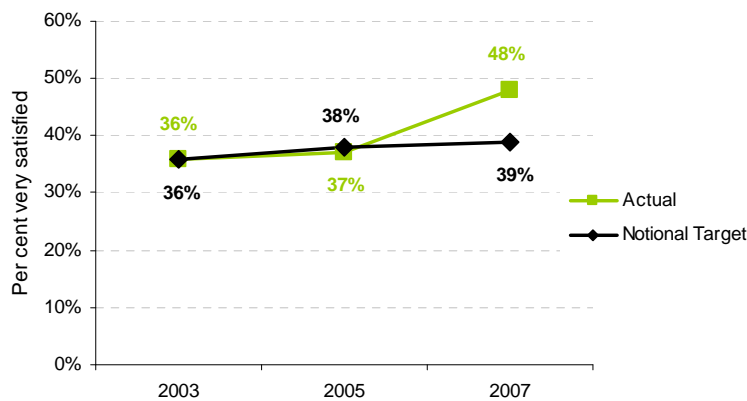
Community Satisfaction with Litter Management

Community satisfaction with litter management is measured by interviews with users of public places who indicate their attitude towards the public place itself, the adequacy of bins and overall satisfaction with litter management in the location.

Level of satisfaction with litter management in an area provides a further indicator of the degree of the community compact with managers of public places. People who recognise and are satisfied with efforts to prevent litter and to keep a location clean are less likely to litter.

Overall community satisfaction with litter management in Victoria has been measured since 2003 as shown in Figure 28 which summarises the proportion of people very satisfied or better with litter management. Notional targets for 2007 community satisfaction with litter management compared to 2003 baseline are also shown.

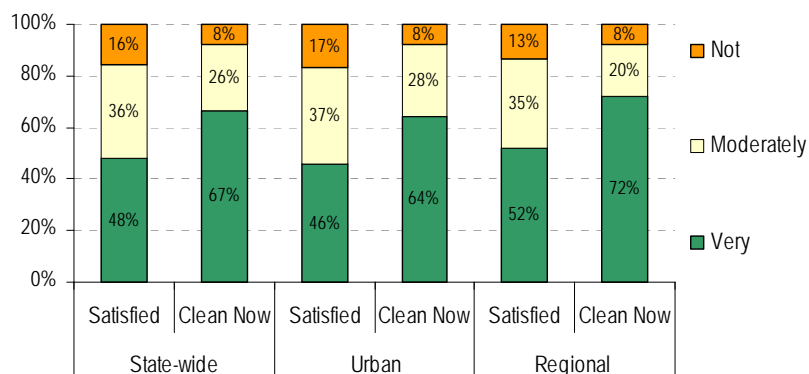
Figure 29 Community Satisfaction Related to Public Places and Litter 2003–07



- Community satisfaction with litter management in public places has increased since 2003 with almost half (48%) of those in public places in 2007 indicating they were 'very satisfied' with litter management in their local area.
- The notional target for improvement in community satisfaction with litter management was exceeded indicating more people were satisfied with efforts at litter prevention in 2007.

Details of community satisfaction with litter management throughout the state and from urban and regional respondents are shown in Figure 30 which also shows the communities' assessment of how clean the location is at the time of the survey ('Clean Now').

Figure 30 Community Satisfaction and Assessments of Location Litter Management 2007

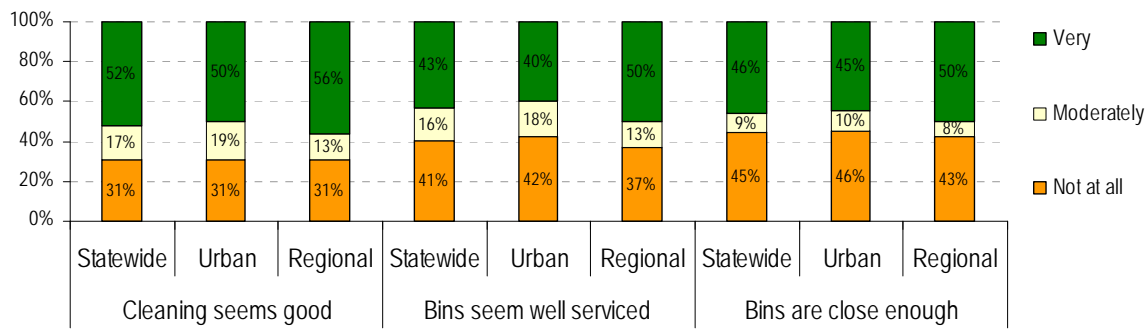


- When asked to look around the location at the time of the survey and make an assessment of the amount of litter present in the location, two thirds of respondents indicated it was 'very clean'.
- Regional respondents were somewhat more likely than their urban counterparts to be 'very satisfied' with litter management, as well as being more likely to report that the location was 'very clean'. Findings in line with littering behaviour and litter count data.

Community Assessment of Location Features

Using the same scale community surveys also assessed relevant features of location cleaning, and *BIN* infrastructure (servicing and position) with outcomes from statewide, urban and regional respondents shown in Figure 30.

Figure 31 Community Assessments of Features of Disposal Facilities 2007



- Just over half of respondents reported cleaning to be 'very good' in the location in which they were interviewed. Urban respondents were somewhat more likely than their regional counterparts to report cleaning to be 'very good'. However, a considerable proportion (31%) of respondents in both urban and regional locations commented that cleaning was 'not at all' good.
- Community assessments for servicing and proximity of bins were even more polarised. Similar proportions (just over 40%) of respondents reported that bins were either 'very well serviced' or 'not at all serviced'. Again, similar proportions (around 45%) reported that bins were either 'very close to where needed' or 'not at all close'.
- Regional respondents were a little more likely than their urban counterparts though to report that bins were 'very well serviced' (50%) and 'very close to where needed' (50%).

In summary, community satisfaction with litter management and assessments of general location cleanliness show there is general satisfaction with efforts at litter prevention and management. These results are congruent with the improvement in CCAT litter prevention scores and seem to indicate that users of public places recognise and support improvements made. However, community sentiments of cleaning practices and bin servicing and proximity are more polarised, indicating that a considerable portion of the community would prefer that more be done to raise standards.

Strategies for improving community assessments of litter management could include more frequent clean up of pockets of litter, litter accumulation points and servicing of bins, as well as improvements to bin facilities.

Conclusions and Recommendations

The Victorian Litter Report (VLR) contains outcomes of a comprehensive benchmarking exercise using the Clean Communities Assessment Tool (CCAT) to provide information on key indicators of litter reduction program effectiveness in public place locations throughout Victoria. The 2007 report compares outcomes to baselines established in the 2003 and 2005 benchmarks.

The Clean Communities Assessment Tool (CCAT) provides:

- Community *disposal behaviour* outcomes including littering and bin use, with outcomes expressed as a 'littering rate'
- Information about *litter on the ground* indicating clean areas and litter hot spots
- Public place ratings of *location features that influence littering and bin use* (CCAT scores)
- Accurate benchmarks to track the progress of interventions and provide feedback on successes as well as problems to be solved
- A measure of community satisfaction with litter management in public places.
- Clear action oriented recommendations for change at both the community wide and individual location level.

Conclusions from outcomes contained in the 2007 Victorian Litter Report are:

1. The 2007 Litter Prevention Performance **CCAT score** of 69/100 (public place ratings of location features that influence littering and bin use) was similar to 2005 (68/100). Although higher than the 2003 baseline benchmark (64/100), it is slightly below the TZW target of 70/100.
2. The **2007 littering behaviour rate** of 31% was similar to 2005 (30%), and did not meet the notional TZW target, which requires progressive decreases in littering behaviour. Nevertheless, most Victorians (69%) continue to manage appropriate disposal of used items in public places.
3. In contrast to 2003 and 2005, littering was more common in **urban** than **regional** locations. This was also reflected in CCAT scores, where regional locations had shown improvement in those public place features influencing littering, whereas urban locations had not changed since 2005.
4. **Site type** also remains an important determinant of littering behaviour with waterfront areas and public buildings continuing to maintain low littering rates. The 'events' site type was a standout success in 2007, from demonstrating the highest rates of littering behaviour at 2003 baseline to the lowest in 2007. Transport and easements continue to be problem areas in relation to littering behaviour and litter on the ground and malls (particularly in urban areas) showing clear progressive deterioration in disposal behaviour since 2003.
5. Whilst key in terms of litter prevention efforts, location features are not the only determinant of community wide disposal behaviour, with education campaigns and enforcement strategies also playing a crucial role. Although these strategies require tailored assessment methods not lending themselves to the regular and structured monitoring of the VLR, the '**events**' site type is an interesting case. In the absence of progressive changes in the CCAT, the striking improvement in littering behaviour rates suggests that the low level of litter on the ground, along with the implementation of large scale awareness campaigns and local activities for events such as the 2006 Commonwealth Games have led to behavioural improvements. Presumably, location management lessons learned during such events have also assisted in this process. It seems apparent though, that this effect is specific to 'events' locations and did not generalise to other site types which received similar levels of attention during events such as the 2006 Commonwealth Games.
6. Littering rates varied considerably between **local government areas** with some areas demonstrating very positive disposal behaviour, for example Hume City Council and City of Ballarat and some not, for example Manningham and to a lesser extent, City of Melbourne and

City of Greater Dandenong. City of Greater Dandenong also demonstrated very high litter counts and a low CCAT score.

7. **Litter on the ground** was at higher levels than both 2003 and 2005 and did not meet notional targets. Whilst a high litter count can point to lack of clean up in a location, it was possibly the result of inclement weather conditions present during 2007 data collection and other factors. Its limitations as an outcome measure have been well discussed, with litter counts being used as a proxy measure only when behavioural data is unavailable. Nevertheless, litter on the ground was far more evident in urban areas, particularly easement and transport locations.
8. Revised litter counts (excluding dog poo and gum) showed cigarette litter to be the **most common type of litter on the ground** in both regional and urban locations and for most (but not all) local government areas and site types.
9. **Community satisfaction with litter management** and assessments of general location cleanliness show there is general satisfaction with efforts at litter prevention and management. However, community sentiments of cleaning practices and bin servicing and proximity are more polarised, indicating that a considerable portion of the community would prefer that more be done to raise standards.

Recommendations

On the basis of these conclusions, the following actions are recommended:

1. Formulate and implement the forthcoming Victorian Litter Strategy as a matter of urgency including a re-examination of TZW littering behaviour change targets in light of realistic timelines required for preparation and implementation of the Victorian Litter Strategy informed by consistent data collection and outcomes derived from the Victorian Litter Report.
2. Consider the renewal of a large scale litter awareness campaign, but not in isolation from local efforts and programs as part of the new Victorian Litter Strategy. Ensure local prevention efforts are well integrated with large scale campaigns.
3. At the local level, examine outcomes for individual locations, learning from those locations performing well, instigating a strategic, systematic and measurable approach to litter prevention, but ensuring local features, character, culture and community expectations are taken into account.
4. Ensure that all prevention programs set well defined behavioural and attitudinal targets, similar to those included as part of the cigarette litter prevention program implemented prior to the introduction of the smoking ban in outdoor licensed premises in 2007. Design, implement and evaluate programs directly in accordance with targets and direct program resources accordingly.
5. Consider the extension of previous holistic approaches to litter prevention to reignite gains made in previously successful campaigns, for example from events such as the 2006 Commonwealth Games and the 2007 smoking bans initiative. Examine how the lessons learned from these efforts might be positively exploited in an active, focussed manner, such as extending butt litter outcomes from smoking premises to other site types.
6. Implement a program of active support to local governments and other key stakeholders where the outcomes and location profiles from the VLR are presented, explained and used to inform program development identifying local successes as well as problem areas. Ensure that this process is interactive with participants receiving a detailed briefing with a number of opportunities to ask questions and provide feedback, recognise achievements, and provide non-judgmental support, particularly to local government areas where social disadvantage exists.

7. As a priority consider specific location improvement and clean up programs for transport locations and easements, most of which remain litter hot spots.
8. Consider the integration of VLR outcomes with information from local councils on the role of enforcement, perhaps identifying those local government areas where such activities are working well in conjunction with other less punitive measures as part of a holistic approach to litter prevention.
9. Continue to **monitor statewide litter prevention performance** and link to a stepwise approach to targets (TZW littering behaviour), and integrate notional targets for litter prevention (CCAT scores), litter counts and community satisfaction levels.
10. Continue to evaluate individual litter prevention programs and consider development of a regular process for integrating these findings with broader VLR results, in order to better understand the relative contribution of specific efforts and the broader picture prevention program.

Appendices

Appendix A: CCAT Methodology

Background

Litter is a key community waste issue and Sustainability Victoria has been actively working with strategic partners through the Victorian Litter Action Alliance to build integrated litter prevention approaches based on sound research platforms.

Increased community expectations for an ever cleaner environment have been met by effective litter prevention campaigns undertaken during the Commonwealth Games in 2006 and the introduction of smoking bans in licensed premises from 1 July 2007.

In its *Sustainability in Action: Towards Zero Waste Strategy* (TZW), the government's focus on litter set a target of a 25% reduction from 2003 littering behaviour benchmarks to be achieved by 2014. This was followed up in the 2006 *Our Environment Our Future Sustainability Action Statement* with a commitment to develop a new Victorian litter strategy.

The **Victorian Litter Report (VLR)** provides information on littering and litter in public places. It shows progress towards TZW targets and provides systematic and reliable information on litter prevention performance in the state and helps to guide programs, ensuring there is less waste and more efficient use of resources.

As part of Sustainability Victoria's commitment to extending the usefulness of findings from the VLR, it has expanded the number of in-depth individual locations analysed in 2007. Every location in the representative sample will be systematically reviewed in depth, providing recommendations on how to prevent litter more effectively at the local level and facilitate improvements in those factors influencing littering behaviour throughout Victoria.

Tools used in the VLR

Developed by social researchers Community Change, the Clean Communities Assessment Tool (CCAT) provides a systematic assessment of littering behaviour, litter and key features of public places. In 2003, 2005 and 2007, Sustainability Victoria has used the CCAT to establish statewide benchmarks and progress towards TZW targets. The Victorian Litter Report 2007 (VLR) contains the outcomes of this comprehensive benchmarking exercise based on the following CCAT measures:

1. **Littering behaviour rate** - the primary outcome measure for behaviour change progress towards TWZ targets.

Observations of disposal actions are the most effective indicator of community littering and bin use, avoiding reliance on self-report measures influenced by social desirability, where there is a frequent mismatch between what people *say they do* with what they *actually do*.

People's littering behaviour can be influenced by numerous factors, including the characteristics of public place locations themselves. Public places that are clean, safe and user friendly promote participation of the community (and visitors) in efforts to care for and maintain the location, as well as engendering a sense of ownership and community pride. In contrast, public places that are dirty and poorly cared for attract not only litter, but are more likely to contain graffiti and other characteristics promoting the likelihood of anti-social behaviour and threaten community safety.

The CCAT categorises disposal acts as 'positive' or 'negative' according to whether items have been effectively contained. Littering (negative) includes littering, dropping, throwing and leaving items on the ground, on top of full, overflowing or closed bins, brimming on bin edges, as well as dog owners

not cleaning up after dog poo and items being swept or kicked into the gutter. Positive acts include bin use (an object disposed into a bin regardless of its recycling status), cigarette butts put into personal ashtrays (often used beverage containers), returning a shopping trolley to a collection bay or cleaning up dog poo.

When sample sizes are large enough to provide robust indicators of littering (and conversely bin use) a **littering behaviour rate** can be calculated and expressed as a percentage, representing littering behaviours as a proportion of overall disposals (positive and negative).

2. **Litter Counts.** The number of littered items present in a 48 square metre area of a location.

Litter counts provide information about litter 'on the ground,' indicating clean areas, litter hot spots, effectiveness of litter containment and litter management practices (including clean up) by relevant authorities, as well as consistent assessment of the composition of materials littered (when sample sizes are large enough to provide robust indicators).

Using the CCAT, litter counts can be used to provide a proxy or an indirect assessment of littering behaviour, particularly when behavioural information is not available or when the observation sample size is too small. However, caution is required when using litter counts to represent littering behaviour because the indirect measure is susceptible to variability not directly related to littering including the influences of cleaning routines, containment of litter, animal scavenging and weather conditions, and provides only limited information on actual community behaviour.

To reduce some of the variability associated with litter counts, a standardised approach to counting items is used in a 48 square metre zone that includes, ideally, a bin and furniture or other infrastructure. In the VLR 2007, reporting of litter count item totals and composition categories have been adjusted and previous results recalculated to focus attention on those items where litter prevention efforts are likely to have a behavioural impact and ensure the most accurate comparison between reports.

3. **CCAT Factor Ratings.** Assessment of Victoria's progress in litter prevention is based on systematic assessment of the features of public place locations that influence littering, bin use, litter accumulation and litter management.

Trained assessors rate the features of a location and conduct community surveys to provide information about attitudes toward litter, its prevention and perceptions about the location. Three primary CCAT factors ('Context', 'Facilities' and 'Community Attitudes and Perceptions') are comprised of the following sub-factors:

1. **Context** (combines assessor ratings and community surveys)
 - Sense of community
 - Feeling of safety
 - Graffiti
 - Commercial and domestic dumping
 - Overall cleanliness of the location
2. **Facilities** (using assessor ratings)
 - Infrastructure (furniture, landscaping, open space, entrance, boundary markers)
 - Condition
 - Cleanliness including presence of old litter and new litter
 - Maintenance
 - BINrastructure (litter, recycling and butt bins)
 - Number
 - Presentation (design, consistency, signage, colour)
 - Position (prominence, proximity, configuration and placement)

Performance (ease of use, size of openings, containment of litter, ability to manage weather)
Cleanliness

3. Community Attitudes and Perceptions (using community surveys)

Adequacy of disposal facilities
Attitudes towards the place itself

Each primary factor consists of assessor ratings of sub-factor based on a five-point scale with assessments ranging from 'very low', 'low', 'medium', 'high' to 'very high'. The higher the CCAT rating for a sub-factor, the cleaner it is likely to be and the greater the likelihood it will remain clean.

Using sub-factor ratings (from CCAT assessor ratings and community survey data) a score from 0-100 is calculated for each of the three primary factors – 'Context', 'Facilities' and 'Community Attitudes and Perceptions'. A Summary CCAT score is also calculated to represent the location's overall litter prevention performance averaged over all three factors.

After conducting CCAT factor ratings assessors develop **location comments and recommendations** (using a systematised procedure) for each *individual* location to provide detailed location reports that give feedback on successes, clear action oriented recommendations for change, as well as problems to be solved.

Action oriented recommendations for improvements can be prioritised at both the community wide and individual location level. At the local level, recommendations can be rapidly implemented, promoting the likelihood that the location will be litter free, eg, by improving bin design, positioning, signage, repairing infrastructure, etc.

In summary, the VLR uses the CCAT methodology to provide a comprehensive method for benchmarking litter prevention performance at a location, local government, regional and statewide level. The report summarises information from a range of performance indicators for determining effective litter prevention programs:

1. Littering behaviour rate (littering actions as a proportion of both positive and negative disposals)
2. Litter counts (average number of items)
3. Type of items found in locations (composition percentage)
4. Summary CCAT score indicating overall litter prevention performance (0-100)
5. CCAT primary factor scores identifying strengths and weaknesses of location features (0-100)
6. An indication of community satisfaction and support for litter prevention programs
7. Assessor comments on individual locations and action oriented recommendations.

VLR 2007 Methodology

The Victorian Litter Report was conducted from early July to early October 2007⁸ and followed standardised CCAT data collection procedures used in the 2003 and 2005 benchmarks.

Sampling procedures followed the protocols established in the 2003 benchmark study and used a sample frame determined by Sustainability Victoria to represent urban population areas in the Melbourne Statistical District and major regional centres. As many locations as possible were reassessed to provide comparability with 2005 data, particularly because of the later start and collection of data over winter in 2007. The VLR 2007 sample consisted of 215 locations, each with individual location profiling.

A more detailed description of CCAT site types, sample selection procedures and summaries of CCAT outcomes for each location is contained in Appendix B.

⁸ The assessment in 2007 was conducted over a longer period of time than previous assessments due to issues in scheduling data collection to avoid wet and windy days when few people were likely to be present in locations.

All location profiles completed as part of the VLR 2007 have been presented as a supplement to this report, *Victorian Litter Report 2007 Individual Location Profiles*.

A typical CCAT benchmark assessment project involves:

1. **Determining the specific local issues to be addressed** as part of the standard CCAT methodology, enabling tailoring of recommendations to key stakeholder concerns.
2. **Preliminary visits to locations** to establish an effective approach to assessment logistics to ensure cost effective data gathering and testing of modified tools to ensure suitability. Before data is collected, suitable locations are selected to include a broad array of site types and, if possible, areas known to stay clean most of the time, as well as litter accumulation hotspots. Once locations have been selected during the project preparation phase, their suitability is reviewed in the field prior to CCAT assessment.
3. **Data collection by two trained CCAT assessors** visiting public place locations. CCAT outcomes include behavioural data, information about litter on the ground, public place ratings, location photos, and tailored location comments and recommendations. During a 25 minute session in a particular location, the interviewer approaches as many people as possible to participate. Brief interviews take approximately four minutes to complete and include a series of items to assess key CCAT components. Participants are also asked to give their views on the performance of the facilities and how effective they think the BIN infrastructure is in reducing litter and encouraging people to do the right thing. Surveyors are trained to avoid personal bias in selecting people to survey and use a convenience approach to randomly select people for interview.
4. **Detailed reporting** of community-wide and location specific outcomes to establish benchmarks and provide a basis for ongoing consultation, education and systematic program development.

Inter-rater Agreement

The level of agreement between two independent CCAT raters in a location is determined using an inter-rater reliability protocol which involves two raters assessing the same location at the same time with no discussion of ratings until after data has been entered into the database.

A total of 8 locations had inter-rater assessments completed by staff members operating in teams of two and comparisons were made by calculating the concordance rate. The concordance rating showed that in 84% of instances, the two raters agreed exactly on the rating. If adjacent values are included in the concordance rating, then in 99% of instances, raters agreed within 1 ranking difference on either side.

Interpreting CCAT Scores

Location features are rated on a scale from 1 to 5 - the higher the score, the cleaner the feature being assessed. For analysis purposes, the ratings are converted to scores on a scale from 0 to 100 points. Table 7 provides a description of CCAT primary factors at the extreme high and low ends of the scale.

Table 7 Interpretation of High and Low Ratings CCAT Indicators

Key Indicator	Factor	High	Low
Summary CCAT	Features combined in a summary rating	Area likely to be extremely clean and resource recovery successful	Area is highly littered, with contamination of recyclables
Context	Community identity and involvement	Strong sense of pride, ownership over the space	Poor sense of ownership & area is not clean
Facilities	Summarises results for bins and furniture	Extremely well maintained, litter free facilities that are easily used and well positioned	Inadequate facilities, poorly maintained
Infrastructure	Condition & cleanliness of all furniture, streetscape and landscaping	Furniture is extremely well maintained, clean and appropriate	Poorly maintained & surrounded by litter
BINrastructure	Features and cleanliness of all litter, recycling and butt bins	Bin design, position and maintenance is highly appropriate to area and usage patterns	Inadequate number, configuration, positioning or servicing of bins
Public Perceptions & Attitudes	Summary of community views on area	Area is perceived as extremely well looked after and serviced	Area is seen as inadequately presented
Attitudes to Place	Views on the area and expected actions	Strong expectation exists for people to do the right thing with used items	No expectation to do the right thing
Attitudes Towards Disposal Facilities	Perceptions of appropriateness of bins and furniture	Facilities are viewed as highly appropriate and meeting needs of community	Community sees a need to improve facilities

Using the CCAT to Enhance Strategic Planning Processes

The CCAT provides a comprehensive and unique assessment of the key features of locations influencing littering that enables councils to go beyond simply installing more bins to providing strategic guidance for systematic change and sustainable public places.

CCAT assessments can be used to:

1. Identify positive local achievements as well as problem areas.
2. Engage location managers and staff in discussions about changes to be made (rather than arguing about responsibilities and ascribing blame) through credible and constructive feedback based on local successes as well as problem areas, and provide a foundation for ongoing positive improvement.
3. Establish community competencies as well as deficits in relation to litter and littering.
4. Reliably assess, through the use of a proven benchmarking method, the progress of litter prevention and management strategies in fostering sustainable change.

Appendix B: VLR Sample Site Types and Location Outcomes

Sustainability Victoria selected the VLR sample from the frame of all Local Government Authorities (LGA's). LGAs were then assigned to strata based on population groupings for urban and regional areas. One LGA was selected from each strata for sampling. The Melbourne Statistical District (MSD) and Greater Geelong City Council were included as separate strata and included in the sample selected.

The selection of LGAs for the VLR was based predominately on precedents set in 2003 using geography and population.

Review of Site Classification and Selection

Sustainability Victoria updated the site classification and sample selection system in 2005 to ensure that the sample of site types selected for assessment and monitoring were appropriate for representing public places in Victoria. Locations used in 2007 largely matched those in 2005 to increase comparability of outcomes and build a clear picture of progress toward TZW targets.

Selection of sites to be assessed was made to reflect information requirements for particular site types and locations within regions. Some VLR site types were selected more often than others, for example shopping centres, due to their more frequent occurrence in the local government areas selected.

The random sample of VLR sites selected in an LGA was influenced by the availability of each site type within the chosen locations. For example, a beach site type might have been randomly selected to be assessed in Hume but there are no beaches in that LGA. Consequently the beach site type was replaced by the next available site type in Hume.

In 2005, school, roadside stops and building sites were dropped from the VLR sample and the outcomes presented in 2007 have been refined to exclude this data from earlier analyses and to enable robust comparisons between VLR assessments. Definitions of site types, sample characteristics and the location of sites, together with the location Summary CCAT score and litter count data are presented in the tables below.

VLR2007 Site Type Sample Features

Table 8 Location Numbers in Final Site Type Sample

Region	City	Shops	Mall	Park	Wtrfrnt	Pblc Bldg	Market	Beach	Event	Transport	Landmark	Smoking	Easement	Wtrfrnt Prcnc	Total	
Urban	Melbourne	6	3	7	6	2	2	0	4	1	8	5	2	2	48	
	Casey	4	1	2	3	4	0	0	0	4	0	2	2	0	22	
	Dandenong	4	1	3	1	2	1	0	0	3	0	1	2	0	18	
	Hume	3	2	2	2	2	0	0	0	2	1	2	1	0	17	
	Manningham	2	2	3	2	2	0	0	0	3	0	1	0	0	15	
	Port Phillip	3	0	2	2	0	1	3	0	0	0	0	1	1	13	
	Yarra	3	0	3	2	2	0	0	0	1	0	0	1	0	12	
	Locations	25	9	22	18	14	4	3	4	14	9	11	9	3	145	
	Regional	Geelong	5	3	4	2	6	1	4	1	4	3	3	4	1	41
		Ballarat	6	2	4	1	1	0	0	0	2	1	2	0	0	19
Mt Alexander		3	0	1	1	1	0	0	0	0	3	0	1	0	10	
Locations		14	5	9	4	8	1	4	1	6	7	5	5	1	70	
VLR 2007 Locations		39	14	31	22	22	5	7	5	20	16	16	14	4	215	

CCAT Site Type Definitions and Sample Features

Site Type	Definition
Beach	The sandy area between the water and a boundary or border that clearly marks areas for recreation. This includes boardwalks and grassy areas adjoining the beach such as St. Kilda beach but excludes parks that are adjacent to the beach such as Brighton beach parkland (included in Parks).
Event	A special occasion often involving large crowds of people attending a venue for a significant activity involving leisure, recreation, or sport. eg, AFL and local VFL football, cricket, Grand Prix, Melbourne Cup, etc.
Landmark	A place (usually a building) characterised as having some significance in terms of the history or culture of the city, and by sightseeing or tourist activity although not designated as such. The Victorian Parliament building in Melbourne offers sightseeing to visitors but its main activity is government. This site type also includes Federation Square and Myer Music Bowl.
Mall	A pedestrian thoroughfare or sheltered promenade with merchandise and food vendors lining the walkway or street, often with limitations on vehicle access, eg, Bourke Street Mall.
Market	An open or covered space where merchandise and food stalls provide fresh produce and/or a range of goods to the public, which often include seating and eating areas, eg, Queen Victoria Market.
Park	Grassy site with shrubbery or garden beds, children's play equipment, seats and tables, often with barbecue facilities used for picnicking and recreation.
Public Building	An area around a building open to the public, which often includes places for people to sit and eat within walking distance of food vendors, eg, library, post office, council building, museum, court, cinema, hospital, etc.
Easement	The public space or area immediately outside or leading up to a ticketed area of a railway station which provides access to the public. An actual or implied fence line extending to a point of unauthorised entry is the limit of the easement.
Shops	Areas for selling goods or services, often with a vehicular thoroughfare down the middle of a street lined with merchandise and food vendors with wide footpaths and places for people to sit, eg, Chapel Street, Lygon Street, Elizabeth Street, etc. Restaurants and cafes are included in this definition where they have outdoor seating for patrons.
Smoking Area	Places outside a building where cigarette smoking is prevalent. Smokers may be catered for (officially or unofficially) by the placement of permanent or temporary ashtrays.
Transport	Outdoor transport terminal or waiting and transit area with pedestrian traffic going to and from public transport stops, eg, all bus stops and tram stops are outdoor transport terminals.
Waterfront	Area next to a body of water, eg, river, lake or pond, often with seats or grassy areas used by the community for recreation and picnicking, eg, Lake Wendouree in Ballarat, Lake Weeroona in Bendigo, Albert Park lake in Melbourne, Yarra river bank Melbourne. Generally, no significant retail activity takes place in these areas.
Waterfront Precinct	Area next to a body of water with cafes and shops, catering for a mix of tourist and significant retail activity, eg, Southbank and the Docklands area in Melbourne.

VLR2007 Site Type Observations Sample

Table 9 Total Observations of Disposal Behaviour in Final Site Types Sample

Observation	Shops	Mall	Park	Wtrfrnt	Pblc Bldg	Market	Beach	Event	Transport	Landmark	Smoking	Easement	Wtrfrnt Prnc	Total
Urban	354	124	77	49	37	73	0	121	96	53	321	30	60	1395
Regional	66	32	11	3	14	13	14	1	35	0	100	6	2	297
VLR 2007	420	156	88	52	51	86	14	122	131	53	421	36	62	1692

VLR 2007 Sample - Locations Assessed and Summary CCAT Scores

LGA	Site	Location	Area	CCAT	LC ⁹
Melbourne	Shops	Elizabeth St	Near Coles	71	31
Melbourne	Shops	Galleria Plaza, Elizabeth St		72	118
Melbourne	Shops	Target Centre, Bourke St		70	74
Melbourne	Shops	Swanston St	Btwn Collins & Lt Collins St	73	46
Melbourne	Shops	Lt Collins St		70	188
Melbourne	Shops	Collins St	Centreway	68	34
Melbourne	Mall	Bourke St Mall	Swanston St	76	14
Melbourne	Mall	Bourke St Mall	Elizabeth St	73	120
Melbourne	Mall	Hardware Lane	Lonsdale St End	67	31
Melbourne	Park	Queen Victoria Gardens		72	33
Melbourne	Park	Yarra Park	BBQ	76	32
Melbourne	Park	Treasury Gardens		73	64
Melbourne	Park	Flagstaff Gardens		78	68
Melbourne	Park	Gordon Reserve		70	48
Melbourne	Park	Fitzroy Gardens		79	16
Melbourne	Park	Kings Domain	Opp VCA	66	74
Melbourne	Waterfront	Yarra River	North Side	68	51
Melbourne	Waterfront	Alexandra Gardens	Boat Sheds	75	55
Melbourne	Waterfront	Exhibition Centre		74	79
Melbourne	Waterfront	Birrarung Marr	Near Federation Square	82	45
Melbourne	Waterfront	Birrarung Marr	Tollway End	82	42
Melbourne	Waterfront	Royal Bot Gardens Melb	Central Lakes	84	8
Melbourne	Public Building	Melbourne Town Hall		68	32
Melbourne	Public Building	State Library		73	107
Melbourne	Market	Queen Victoria Market		72	11
Melbourne	Market	Southbank Sunday Market		67	63
Melbourne	Event	MCG	Tower 2	70	31
Melbourne	Event	MCG	Tower 3	67	20
Melbourne	Event	MCG Footbridge	Tower 4	75	24
Melbourne	Event	MCG Footbridge	Vodafone Arena End	72	6
Melbourne	Transport	William St	Cnr Bourke St	64	45
Melbourne	Landmark	VCA, opp George V Statue		68	97
Melbourne	Landmark	Rialto Towers		53	26
Melbourne	Landmark	City Square		71	33
Melbourne	Landmark	Flinders St Station		69	44
Melbourne	Landmark	Exhibition Building	Fountain	73	26
Melbourne	Landmark	Myer Music Bowl	Near George V Statue	82	18

⁹ The average for total littered items counted on the ground is abbreviated to LC - Litter Count

LGA	Site	Location	Area	CCAT	LC ⁹
Melbourne	Landmark	Between Hamer Hall and Arts Centre		72	89
Melbourne	Landmark	St Kilda Rd in front of Hamer Hall		69	17
Melbourne	Smoking	Melbourne Central, 360 Elizabeth St		64	23
Melbourne	Smoking	Defence Plaza		61	61
Melbourne	Smoking	222 Exhibition st		70	66
Melbourne	Smoking	Collins Place, 35- 55 Collins St		72	100
Melbourne	Smoking	242 Exhibition st		62	59
Melbourne	Easement	Southbank		64	17
Melbourne	Easement	Southern Cross Station - Collins St end		68	44
Melbourne	Waterfront Precinct	Southbank	Southgate Entrance	76	14
Melbourne	Waterfront Precinct	Docklands	New Quay	80	9
Geelong	Shops	Market Sq		74	39
Geelong	Shops	Moorabool St, Cnr Malop St		73	14
Geelong	Shops	High St shops Belmont		76	14
Geelong	Shops	Separation St, Corner Thompson Rd		58	135
Geelong	Shops	The terrace Cnr Presidents Ave		74	15
Geelong	Mall	Lt Malop St Mall		67	65
Geelong	Mall	Labuan Sq		67	84
Geelong	Mall	Highton Shopping Village		72	19
Geelong	Park	Rippleside	Playground	82	44
Geelong	Park	Eastern Beach	Reserve	79	16
Geelong	Park	Johnstone Park		78	7
Geelong	Park	Cameron Pk		84	5
Geelong	Waterfront	Barwon Valley Park		73	101
Geelong	Waterfront	Balyang Sanctuary		78	10
Geelong	Public Building	Wool Museum		70	12
Geelong	Public Building	GPAC		71	5
Geelong	Public Building	Geelong Library		69	30
Geelong	Public Building	Information Centre		71	59
Geelong	Public Building	Waterworld		62	15
Geelong	Public Building	Ocean Grove P.O.		66	38
Geelong	Market	Corio Markets		61	42
Geelong	Beach	Rippleside	Lions club	81	21
Geelong	Beach	Eastern Beach		74	3
Geelong	Beach	Ocean Grove	Hodgson St	71	15
Geelong	Beach	Ocean Grove SLSC		75	84
Geelong	Event	Skilled Stadium	Graham 'Polly' Farmer Gate	64	48
Geelong	Transport	Moorabool St Bus Stops		74	28
Geelong	Transport	Geelong Train Station		70	17
Geelong	Transport	Malop St Bus Stops		73	10
Geelong	Transport	High St Bus Stops		71	14

LGA	Site	Location	Area	CCAT	LC ⁹
Geelong	Landmark	City Hall Geelong	North Side	72	51
Geelong	Landmark	City Hall Geelong	Entrance	69	18
Geelong	Landmark	Boer War Memorial Park		62	42
Geelong	Smoking	State Government Offices		73	16
Geelong	Smoking	Centrelink Geelong		60	82
Geelong	Smoking	ATO, Brougham St		70	89
Geelong	Easement	South Geelong Train Station		66	33
Geelong	Easement	Lara Train Station		58	129
Geelong	Easement	North Geelong Station		56	75
Geelong	Easement	North Shore Station		43	82
Geelong	Waterfront Precinct	Carousel		79	3
Dandenong	Shops	Walker St		65	50
Dandenong	Shops	Douglas St, Noble Park		62	60
Dandenong	Shops	Springvale Shops	Safeway	70	43
Dandenong	Shops	Athol St shop	Plaza	64	8
Dandenong	Mall	Palm Plaza Mall		61	76
Dandenong	Park	Dandenong Park	Lonsdale st end	67	40
Dandenong	Park	Fotheringham Reserve		65	83
Dandenong	Park	Burden Park		67	92
Dandenong	Waterfront	Dandenong Park	Near Footbridge	68	33
Dandenong	Public Building	Post office on Langhorne St		76	3
Dandenong	Public Building	Springvale Library Back ent		69	119
Dandenong	Market	Dandenong Market		67	79
Dandenong	Transport	McRae St Bus Stop		59	157
Dandenong	Transport	Dandenong Station		57	217
Dandenong	Transport	Bus Stop 303-321 Springvale rd		56	110
Dandenong	Smoking	ATO, Mason St		53	48
Dandenong	Easement	Dandenong Station		68	163
Dandenong	Easement	Springvale Station Lightwood rd side		44	84
Manningham	Shops	Templestowe Village		63	66
Manningham	Shops	Blackburn Rd		68	43
Manningham	Mall	Macedon Square		75	61
Manningham	Mall	Goldfields Plaza		75	55
Manningham	Park	Koonung Reserve		74	10
Manningham	Park	Ruffey Lake Park		65	57
Manningham	Park	Birrarrung Park		68	48
Manningham	Waterfront	Westerfolds Park, Swamp Gum end		70	175
Manningham	Waterfront	Banksia Park	BBQ	70	29
Manningham	Public Building	The Pines Branch Library		65	92
Manningham	Public Building	Doncaster Branch Library Temp Site		79	52
Manningham	Transport	Westfield Doncaster, Smk area	Bus Terminal	63	55

LGA	Site	Location	Area	CCAT	LC ⁹
Manningham	Transport	The Pines Shopping Centre		67	85
Manningham	Transport	Goldfields Plaza Bus Stop		63	94
Manningham	Smoking	Westfield Doncaster, Smk area		67	66
Ballarat	Shops	Bridge Mall	Near McDonalds	66	59
Ballarat	Shops	Sturt St	Book City	68	35
Ballarat	Shops	Sebastopol Shops cnr Rubicon		68	10
Ballarat	Shops	Bunninyong Shops cnr Learmonth & Warrenheip		71	5
Ballarat	Shops	Howitt St 1219B-1225D		71	23
Ballarat	Shops	Central Sq	Target Entrance	65	110
Ballarat	Mall	Bridge Mall	Sturt St End	71	45
Ballarat	Mall	Phoenix Mall	Eastern Side	73	24
Ballarat	Park	DeSoza Pk		75	23
Ballarat	Park	Victoria Pk	Between Sturt & Oak Avenue	68	54
Ballarat	Park	Windmill Drive Precinct	Adventure Playground	74	84
Ballarat	Park	Botanic Gdns , Ballarat	Morey Gate	84	10
Ballarat	Waterfront	Wendouree Parade	Gnarr St	70	68
Ballarat	Public Building	Ballarat Miner Dome		66	124
Ballarat	Transport	Lt Bridge St Bus Stop		68	29
Ballarat	Transport	Central Sq	Myer Entrance	72	22
Ballarat	Landmark	Camp St Precinct		70	30
Ballarat	Smoking	Phoenix Mall	West Side	67	4
Ballarat	Smoking	Wendouree Village		67	18
Hume	Shops	Sunbury Shops, Evans cnr Brook		65	33
Hume	Shops	Mahoney's Plaza Shopping Centre		72	43
Hume	Shops	Roxburgh Park Shopping Centre		72	45
Hume	Mall	Link Arcade, Sunbury		66	14
Hume	Mall	Dallas Square		71	124
Hume	Park	Sunbury Recreation Reserve		62	40
Hume	Park	Broadmeadows Town Park		59	88
Hume	Waterfront	Apex Park, Sunbury Rd		71	14
Hume	Waterfront	Jack Roper Reserve		72	45
Hume	Public Building	Broadmeadows Library		68	23
Hume	Public Building	Council Offices, Broadmeadows		73	9
Hume	Transport	Broadmeadows Station Bus Stops		60	52
Hume	Transport	Sunbury Train Station Bus stop		58	41
Hume	Landmark	George Evans Museum		76	20
Hume	Smoking	Centrelink Broadmeadows		67	93
Hume	Smoking	Meadow Heights Shopping Centre		64	54
Hume	Easement	Broadmeadows Station		58	262
Casey	Shops	Berwick Village		70	81
Casey	Shops	Webb St, Narre Warren		67	18

LGA	Site	Location	Area	CCAT	LC ⁹
Casey	Shops	Hampton Park Shopping Square		65	4
Casey	Shops	High St Shops, Cranbourne		75	31
Casey	Mall	Clydesdale Square Cranbourne		68	44
Casey	Park	Wilson Botanic Park	Playground	75	21
Casey	Park	Lawson Poole Reserve		73	8
Casey	Waterfront	Akoonah Park, Berwick		69	47
Casey	Waterfront	Buchanan Park		64	88
Casey	Waterfront	Banjo Paterson Park		66	81
Casey	Public Building	Narre Warren Library		63	59
Casey	Public Building	Hampton Park Library		69	23
Casey	Public Building	Cranbourne Library		60	30
Casey	Public Building	Family Resource Centre		71	25
Casey	Transport	Webb St, Narre Warren		61	132
Casey	Transport	Fountain Gate Bus Stops		59	46
Casey	Transport	Hallam Bus Stop opp Station		48	180
Casey	Transport	Lyll St		61	10
Casey	Smoking	Clydesdale Mall/Cranbourne Park SC		64	126
Casey	Smoking	Cranbourne Park Carpark		61	40
Casey	Easement	Narre Warren Train Station		62	92
Casey	Easement	Cranbourne Railway Station		55	306
Port Phillip	Shops	Bay St Shops	Outside Coles	69	29
Port Phillip	Shops	Carlisle St	Corner Woodstock Street	73	31
Port Phillip	Shops	Acland St	Safeway	72	45
Port Phillip	Park	Alma Park East		66	77
Port Phillip	Park	Elwood Park		73	19
Port Phillip	Waterfront	Albert Park	Playground	78	91
Port Phillip	Waterfront	Pt Ormond Reserve		69	14
Port Phillip	Market	The Esplanade	Opposite Footbridge	65	31
Port Phillip	Beach	Elwood Beach		72	81
Port Phillip	Beach	Port Melbourne Beach		75	6
Port Phillip	Beach	Sandridge Beach		76	10
Port Phillip	Easement	Ripponlea Station		68	27
Port Phillip	Waterfront Precinct	Beacon Cove		65	55
Yarra	Shops	Queen's Parade		59	80
Yarra	Shops	Victoria St, Richmond 176-214		58	54
Yarra	Shops	Bridge Road	Richmond Plaza	63	32
Yarra	Park	Darling Gardens		70	26
Yarra	Park	Edinburgh Gardens		73	22
Yarra	Park	Citizens Park		67	112
Yarra	Waterfront	Dight Falls		53	79
Yarra	Waterfront	Flockhart Reserve		72	66

LGA	Site	Location	Area	CCAT	LC ⁹
Yarra	Public Building	Carlton Library		68	39
Yarra	Public Building	Collingwood Town Hall		59	37
Yarra	Transport	Bridge Rd & Church St Tram Stop		67	279
Yarra	Easement	Richmond Station	Brunton Avenue	46	112
Mt Alexander	Shops	Mostyn Street Shops, cnr Frederick		70	24
Mt Alexander	Shops	Barker Street Shops, cnr Lyttleton St		76	22
Mt Alexander	Shops	Main Street Shops Maldon, Dolphin St to Garage		72	15
Mt Alexander	Park	Victory Park		79	23
Mt Alexander	Waterfront	Castlemaine Botanical Gardens		80	3
Mt Alexander	Public Building	Castlemaine Post Office		75	97
Mt Alexander	Landmark	Burke and Wills Monument		64	66
Mt Alexander	Landmark	Maldon War Memorial		75	18
Mt Alexander	Landmark	Mt. Tarrangower Lookout		72	59
Mt Alexander	Easement	Castlemaine Train Station		75	11

Appendix C: Items Included in CCAT Item Type Categories

2005 Type	Items Included	2007 Type	Items Included
Confectionery	Chewing gum Confectionery wrappers Ice cream wrappers	Confection wraps	Confectionery wrappers Ice cream wrappers
Paper	Paper bags Serviettes and tissues Receipts and tickets Paper pieces, newspaper, advertising material Takeaway boxes, cardboard boxes, cardboard pieces	Paper	Paper bags Serviettes and tissues Receipts and tickets Paper pieces, newspaper, advertising material Paper cups
		Cardboard	Takeaway boxes, cardboard boxes, cardboard pieces
		Beverage	
Beverage	Glass bottles and pieces Plastic bottles and cups Plastic caps, straws and utensils Paper cups and tetra boxes Aluminium cans, metal caps, ring pulls and pieces	Component items of beverages are reported separately	Glass bottles and pieces Plastic bottles and cups Plastic bits, caps, straws and utensils Aluminium cans, metal caps, ring pulls and pieces
Cigarette	Cigarette butts Cigarette packets, wrappers, foil and matches	Cigarettes	Cigarette butts Cigarette packets, wrappers, foil and matches
Organic	Animal poo Food Wooden utensils	Organics	Food Wooden utensils
Plastic film	Plastic film, bags and wrappers	Plastic film	Plastic film, bags and wrappers
Other	Packaging straps Shopping trolleys Syringes Other items not listed above	Other	Packaging straps Shopping trolleys Syringes Other items not listed above
		Not reported	Animal poo
			Chewing Gum
In 2007 there were 10,216 items of chewing gum ¹⁰ and animal poo in litter count areas.			

¹⁰ Over 22% of locations had chewing gum counts greater than 100 items; the total includes the 100 item limit for ease of comparison.