



PLACE-BASED APPROACHES TO
COMMERCIAL AND INDUSTRIAL
WASTE AND RECYCLING

DEPARTMENT OF SUSTAINABILITY, ENVIRONMENT, WATER, POPULATION AND COMMUNITIES

PLACE-BASED APPROACHES TO C&I WASTE AND RECYCLING

Final Report

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Appendix A Interim Report – *Place-based approaches to C&I wastes* – As provided to the Stakeholder

Appendix B Reference Group for discussion

Stakeholder Workshop Notes – Sydney, 17 April, 2012

EXECUTIVE SUMMARY

This report considers seven general place-based approaches to commercial and industrial (C&I) waste. For the purposes of this report, a 'place,' or 'precinct', may be considered in scales ranging from a single building or block, to a suburb, an area of a city, or a whole city. The approaches considered in this report are distinguished by not applying at scales beyond a city (such as across an entire State or Territory). It is noted that adopting this definition led the project to consider a broader range of options than what some stakeholders appear to have traditionally considered to constitute a precinct or place-based approach.

The general place-based approaches discussed in this report are:

- 1 Precinct or place-based licensing
- 2 Place-based direct investment
- 3 Place-based restrictions on direct landfill disposal
- 4 Waste catchment analysis
- 5 Waste matching initiatives
- 6 Minimum recovery / recycling standards
- 7 Opportunities to enhance the uptake of NABERS Waste.

While there are significant differences between these approaches, a key similarity is that each approach could – potentially – be used to help improve C&I waste and recycling outcomes by allowing policy makers and program designers to implement solutions that are tailored to a specific area, rather than being applied to a whole jurisdiction (or nationally).

This ability to tailor solutions to meet local conditions is the central attraction of place-based solutions. It is important to note that, while this study provides a national overview of various place-based approaches, and has been commissioned by the Australian Government, the objective is clearly not to identify any place-based approach that should be applied nationally.

At the same time, there are a number of 'cross cutting' issues associated with C&I waste management that are similar in all (or most) Australian jurisdictions. For example, waste management is simply not a priority for most businesses because it generally represents a small line item in company operating budgets, or is not identified at all.

The C&I sector is responsible for generating around one third of Australia's total waste stream, and there is significant scope for improved resource recovery performance. The *National Waste Report 2010* shows 44% of the C&I waste generated in 2006–07, some 6.5 million tonnes, was disposed to landfill.

Some of the potential advantages that may be associated with place-based approaches to C&I waste and recycling include helping reduce waste generation, increasing resource recovery rates, aiding in the development of critical infrastructure, and providing a range of 'efficiency' savings such as through reduced truck movements and fewer bins.

Some of the possible barriers include potential breaches of the *Competition and Consumer Act 2010*, resistance to change and increased bureaucracy, a lack of existing data on which to base decisions, and a range of difficulties associated with administration and enforcement.

For each of the approaches considered in this report, there are potential advantages and potential barriers / issues identified (see summary Table 1-1). There is no 'clear winner' in terms of an approach that provides large benefits, low barriers, and could be widely implemented in order to improve waste and recycling outcomes for C&I generators. Place-based restrictions on direct landfill disposal, such as underway in South Australia, offer the best potential to achieve large reductions in tonnage of C&I waste to landfill, but depend on infrastructure availability and may require lengthy notice and transition periods.

This project involved detailed discussion with a Stakeholder Reference Group representing various levels of government, private contractors, waste generators, NGOs and the ACCC. This included a half-day Stakeholder Workshop in Sydney on April 17, 2012, where stakeholders were encouraged to discuss place-based approaches to C&I wastes. Detailed notes from this meeting are provided as Appendix 2.

Based on Hyder's research and input from a wide range of stakeholders, the key conclusions and recommendations contained within this report include that:

- there are a number of initial attractions to place-based licensing approaches, but organisations considering these approaches should seek legal advice and consult closely with contractors and the ACCC in order to fully understand competition impacts prior to implementation, as there is likely to be a high level of resistance from contractors.
- there is potentially a high degree of merit in encouraging development of infrastructure to meet a specific need within a precinct via direct investment, but proponents need a detailed understanding of the waste stream in order to develop technology suitable for processing that material, and be able to develop or access markets for the final outputs.
- of the various options considered within this report, landfill bans are the only approach almost guaranteed to improve resource recovery levels, and there is a high level of interest in the South Australian approach of banning direct landfill disposal of unsorted commercial wastes. However, implementation would involve major market reform in other Australian jurisdictions, and may increase total waste management system costs.
- access to accurate, fine grained detail on C&I waste generation and management approaches would be of great help in progressing efforts to improve C&I performance, and it would be useful to explore options for developing an information exchange system that could help to capture C&I data from private operators.
- development of waste matching initiatives that enable two (or more) businesses to achieve mutual benefit by using the waste stream from one process as an input to another could be considered the pinnacle achievement of place-based approaches to C&I waste, and high value should be placed on wider pursuit of such opportunities.
- approaches that involve applying minimum standards to C&I waste generators provide an 'upstream' focus that can potentially achieve higher-order outcomes and promote long-term behaviour change, rather than being an 'end-of-pipe' solution. Access to reliable and detailed information about C&I waste generation and composition patterns could lead to improved design and enforcement of standards.
- NABERS provides an opportunity for office building owners and tenants to undertake a simple assessment and benchmark waste performance in a way that is very easy to understand and could be attractive for uptake by a large number of C&I waste generators, although outcomes are limited by the lack of compulsion for business to use the system.
- Hyder recommends the Department and the C&I/C&D Working Group further investigate the development of a nationally consistent licensing / accreditation system for waste service providers that could be implemented and enforced by each jurisdiction.
- Hyder recommends the Department considers undertaking (or supporting) a robust assessment of resource recovery infrastructure needs for major population centres within each jurisdiction, with a view to encouraging jurisdictional government to identify and protect appropriate locations for development of critical infrastructure.

The business case for adopting any of the place-based approaches outlined in this report (and detailed system design associated with these approaches) would need to be considered on a case-by-case basis. We hope this report will provide program and policy designers a solid basis for understanding the key issues and advantages associated with various place-based approaches to C&I wastes, and assist them in targeting future efforts.

Table 1-1 Summary of potential advantages and issues associated with each place-based approach considered

See Chapters 4–10 for more detailed discussion, case studies and conclusions associated with each approach

Description	Potential Advantages	Potential Issues
<p>Precinct or place-based licensing: Precinct or place-based licensing of collection service providers, attached to minimum service coverage requirements. For example, as a condition of licence, all commercial premises in the licence area might need to be provided with a commingled C&I recycling bin and appropriate collection service. Allocation of areas to licensees could be based on auctioning, competitive tender or similar processes.</p> <p>(See Chapter 4 for more detail)</p>	<ul style="list-style-type: none"> more efficient collection runs, with reduction in truck movements and associated impacts (noise, congestion, emissions) and more control over collection times in the precinct can set minimum service standards (e.g. provision of co-mingling recycling service) easier to monitor and manage if there is a single port of call with contractors the opportunity to choose the disposal / processing pathway for collected materials. 	<ul style="list-style-type: none"> difficulties identifying an appropriate body to coordinate such arrangements (for example councils, or a local business chamber) different businesses may have widely different service requirements, unlike the municipal sector where there is general uniformity in terms of bin sizes and collection frequency resistance from collection service providers if implementation of such approaches impacts on existing businesses, or if profit margins associated with a joint arrangement are lower than the profit margins on individual arrangements may lead to a 'lowest common denominator' outcome that stifles potential innovation in terms of increased resource recovery by some individual businesses difficult to guarantee efficiency improvements and other desired performance outcomes, which may make it difficult to pass public interest tests increased bureaucracy will lead to frustration if no clear benefits are evident.
<p>Place-based direct investment: Place-based direct investment (or co-investment) for specific infrastructure and/or service provision. For example, this may include investment in local digesters for restaurant and cafe precincts, commingled recyclables bins for small clusters of high-street shops, or mixed C&I materials recovery facilities for cities.</p> <p>(See Chapter 5 for more detail)</p>	<ul style="list-style-type: none"> ability to target isolated precinct / specific grouping of C&I waste generators with provision of directly relevant infrastructure clear mechanism to monitor uptake and performance can be established, assuming sufficient stakeholder consultation and support prior to infrastructure provision potential for very high resource recovery rates in some instances, helping develop showcase examples that can drive further investment ability to address specific issues within a precinct. 	<ul style="list-style-type: none"> finding a suitable location close to the precinct to store the required infrastructure / equipment, and having sufficiently skilled operators for equipment requirement for someone to fund capital costs of infrastructure, as well as the on-going operation of equipment requires commitment by businesses within the precinct to support and appropriately use the specific infrastructure, and a champion for the cause may present competition concerns if C&I generators are 'forced' to use the system.

Description	Potential Advantages	Potential Issues
<p>Restrictions on direct disposal</p> <p>Place-based restrictions on direct landfill disposal. This could include landfill restrictions, or bans on mixed C&I waste being disposed of to landfill from a collection service area/catchment unless it has been subject to an appropriate process of sorting, recovery or treatment (such as the South Australian approach).</p> <p>(See Chapter 6 for more detail)</p>	<ul style="list-style-type: none"> the only place-based approach considered that is almost guaranteed to result in higher resource recovery rates smaller regulatory footprint than some other possible approaches, in that it does not require direct engagement with all C&I generators or necessarily any amendments to their existing practices provides increased certainty of feedstock for businesses that are seeking to invest in processing and resource recovery systems for C&I waste <hr/> <ul style="list-style-type: none"> European experience suggests significant increases in resource recovery rates are possible (for example, German bans on 'untreated' waste to landfill increased diversion rates from 73% to 99% over the space of 6 years). 	<ul style="list-style-type: none"> there is no point banning items from landfill unless there is a clear alternate pathway for that material; without sufficient resource recovery options, the material may only be stockpiled requires sufficient lead time for development of required alternate pathways, and therefore has a significant lag time prior to achieving tangible outcomes will need to be supported with a range of other appropriate reforms, such as licensing systems that can allow the regulator to efficiently and effectively enforce compliance burden of resource recovery is on processors / landfill operators, and may not encourage behaviour change within individual businesses is likely to increase overall waste management costs difficult to enforce and will require significant resources to monitor each load of waste delivered to a disposal site.
<p>Waste catchment analysis Waste catchment analysis. Options under this category include trying to develop fine-grained, spatially-accurate understanding of waste generation and landfill diversion opportunities. For example, this could involve consideration of using RFID tagging of bins, truck-based GPS and lift-weight recording to compile real-time and spatially-accurate data on actual flows of C&I waste and recycling, based on defined precincts or service areas.</p> <p>(See Chapter 7 for more detail)</p>	<ul style="list-style-type: none"> access to reliable data supports evidence-based policy and program development allows for development of targeted infrastructure and programs responding to specific needs in the area potentially allow for optimisation of collection runs for contractors, enabling for example a more efficient recycling service if contractors know requirements of the various business groupings. 	<ul style="list-style-type: none"> potential resistance to anyone gathering this level of data, due to commercial sensitivities of the waste generators (RFID programs in the municipal sector have in some case lead to "big brother" accusations and a high level of resistance from waste generators) practical difficulties in categorising waste materials and even weighing individual bins in the course of normal collection activities could result in a huge volume of data being collected, and it would be a challenging task to fully interrogate the available information.

Description	Potential Advantages	Potential Issues
<p>Waste matching initiatives These options could include matching waste generators with collection service providers or users of wastes as resources.</p> <p>(See Chapter 8 for more detail)</p>	<ul style="list-style-type: none"> can unlock significant savings opportunities where one party reduces costs associated with disposing a 'waste' material and another party reduces costs associated with raw material inputs may encourage re-use of materials, which is a high priority on the waste management hierarchy could link in well with other place-based approaches (for example waste catchment analysis) as part of the suite of options to improve C&I outcomes can provide tools for C&I waste generators to make the appropriate decisions regarding the management of their waste streams. 	<ul style="list-style-type: none"> limited examples of one company's waste being in high demand by another company (with the exception of waste collection, processing and disposal companies) where there is a match between material wastes and needs, there may still be issues with physically transporting materials between the sites in a safe and economic manner requires commitment from one (or more) stakeholders to seek out opportunities it may be difficult to encourage the use of available tools, as not all C&I generators will be aware of the existence of such tools and/or may lack the internal resources to appropriately use the tools available.
<p>Minimum standards for generators</p> <p>Options for using existing regulation (such as licenses and planning approvals) or non-regulatory measures on generating businesses to require them to provide facilities for recycling, within certain precincts or service areas. These standards could be based on a principle of equivalence with kerbside collection service requirements offered to households in the same general service area.</p> <p>(See Chapter 9 for more detail)</p>	<ul style="list-style-type: none"> directly impacts on waste generators, and can therefore help to drive behaviour change and uptake of opportunities to reduce waste generation at source (which is the most preferred outcome on the waste hierarchy) provides an opportunity to encourage building designers and developers to consider provision of adequate waste and recycling services at building design phase, and for this to flow through to better performance during operational stages can ensure appropriate provision of key infrastructure and sufficient space / access to allow for roll-out of services. 	<ul style="list-style-type: none"> may be very difficult to monitor and enforce there may be a significant time lag before significant improvements are achieved through planning consents, given building renewal rates difficult to accommodate future changes in current requirements (for example, many current buildings were designed prior to regular provision of recycling services, and systems designed now may not suit future material stream collection requirements) standards and systems in different local government areas may be inconsistent, which could be frustrating for C&I generators who operate in multiple areas, or who move areas developers may take a 'tick the box' approach to meeting requirements, and engage an external consultant, which limits the opportunity for this to drive long-term awareness and behaviour change.
<p>Enhance the uptake of NABERS Waste</p> <p>Opportunities to enhance the uptake of NABERS Waste. The suite of NABERS Waste building environmental ratings, covering different types of buildings that generate C&I waste, could be better-used.</p> <p>(See Chapter 10 for more detail)</p>	<ul style="list-style-type: none"> by providing market recognition and potentially a competitive advantage for buildings with a high rating, NABERS can increase commercial acceptance of better practice systems the approach rates a building according to its actual performance, based on a simple waste audit the star rating system makes it very easy for users to understand their performance level. 	<ul style="list-style-type: none"> as a voluntary system, NABERS requires the building owner, manager or tenant to actively seek out the system and undertake the rating outputs are based on a simple waste audit approach the most likely users are those which are already high performers, while those who could achieve higher gains may not be attracted to undertaking the voluntary assessment.

2 CURRENT PRACTICES AND ISSUES

The *National Waste Report 2010* estimates total waste generation in Australia of 43.8 million tonnes (using 2006-07 data), of which 14.5 million tonnes (or 33%) is attributed to the commercial and industrial (C&I) sector. Of the C&I waste generated, the *National Waste Report 2010* shows an estimated 8.1 million tonnes (or 56%) was recycled while 6.5 million tonnes (44%) was disposed to landfill.

The *Waste and Recycling in Australia 2011* report, developed by Hyder but an unpublished draft at time of this writing, has for the first time attempted to apply a nationally consistent approach to reporting waste data. The draft report estimates national C&I waste generation in 2008–09 totalled 13.7 million tonnes, with 7.3 million tonnes (or 54%) recycled or recovered, and 6.4 million tonnes disposed to landfill.

It is clear the C&I sector is responsible for a large portion of Australia's waste stream, and there is significant scope for improved resource recovery performance given the large volume of C&I waste currently disposed to landfill. This is reflected in the resource recovery targets established by the various jurisdictions, as shown in Table 2-2.

Table 2-2 Estimated C&I recovery rates in 2006–07, and recovery targets established in each jurisdiction

Jurisdiction	Estimated C&I recovery in 2006–07 ¹	C&I recovery target	Target deadline
New South Wales	44%	63%	2014
Victoria	69%	80%	2014
Queensland	62%	40%	2014
South Australia	55%	75%	2015
Western Australia	53%	55%	2015
Tasmania	13%	No specific C&I target	
ACT	53%	No specific C&I target. Overall target 80% by 2015	
Northern Territory	Unknown	No specific C&I target	

The *Review of Waste Strategy and Policy in New South Wales 2010*² (the Richmond Review) notes, "C&I waste is diverse, making it technically difficult and expensive to sort and recover materials". In addition to this, around half of the C&I waste stream is biodegradable, leading to potentially significant greenhouse emissions implications. The Richmond Review further notes:

"The C&I waste stream continues to be the hardest stream to tackle as it has so many players of different sizes and across different areas, with often diverse and ad hoc recycling systems. Among the industry sectors generating C&I wastes in Sydney, mixed SMEs³ are the largest contributor (45%) followed by manufacturing (18%), retail trade (7%), property and business services (6%) and construction activity (5%)."

There are significant differences between the C&I waste stream and the other two general solid waste streams generated in Australia, being construction and demolition (C&D) waste and

¹ Based on data published in the *National Waste Report 2010*

² <http://www.environment.nsw.gov.au/resources/warr/101034RevWasteStrat.pdf>

³ Small to Medium Enterprises (SMEs) are generally defined in Australia as having less than 100 employees (manufacturing sector) or less than 50 employees (services sector). Most SMEs employ less than 50 people

municipal solid waste (MSW). Programs and policies designed to increase resource recovery from the MSW or C&D streams may not be as effective at influencing the C&I stream.

C&D waste (containing a high proportion of inert materials such as soil, concrete and bricks) generally has a higher density than C&I wastes, and being 'heavy' is more directly influenced by weight-based disposal charges. As such, it is more responsive to mechanisms such as landfill levies than 'lighter' waste streams are. C&D waste may also be generated in high volume over a short timeframe (for example, following demolition of a building) which means disposal costs may be more visible to generators.

MSW is generally aggregated and managed by local councils (either directly, or through a contractor). Waste management is one of the core functions of local government, and represents one of the biggest areas of annual expenditure for most councils. This provides incentives to reduce disposal costs through implementation of resource recovery programs (where these are cost effective). Having a central point of contact also makes it easier for jurisdictional governments to influence performance (for example, through the Waste and Sustainability Implementation Plan funding program in NSW).

In contrast to the MSW or C&D streams, the C&I stream is much more difficult to influence. Waste management generally represents a very small cost to individual business, relative to other business operating costs. This means waste management is often 'below the radar' for most businesses and, even if landfill disposal costs were to double, the overall cost to an individual business may still remain a small line item.

A further barrier is that many businesses consider waste management as one of the fixed costs of doing business. This mentality is reinforced by the dominance of volume-based charging mechanisms for commercial waste collection. For example, most C&I generators will pay a contractor a set fee to empty a container of set capacity on a regular frequency. Whether the bin is half full or totally full on collection day, the business is likely to pay the same rate.

Mass-based reporting and / or charging for C&I generators is becoming more popular, due to demand from generators who are seeking to measure their waste performance, and this service is now offered by some contractors. There are, however, some practical limitations, especially with on-board weighing technology. Significantly, the time taken to weigh a container during collection can be an issue for contractors⁴ and this additional service is priced accordingly.

It should also be noted that, compared with MSW, C&I waste tends to be more 'mobile', with generators (and / or contractors) potentially prepared to transport it longer distances in order to achieve lower processing or disposal costs. MSW tends to be managed under long-term contracts with specified processing and disposal locations. This is not always the case for C&I waste generators. There is anecdotal evidence that commercial waste disposal patterns can be significantly impacted due to changes in disposal costs, for example in regions near state borders where changes in landfill levy application may create a disposal price differential.

Resource recovery in the C&I sector can be achieved either through uptake of source separation systems that allow for relatively clean streams of homogenous materials to be collected and processed, or via technology solutions that can recover resources from mixed C&I waste streams. However, private sector operators commonly report it is difficult to justify making significant investment in resource recovery infrastructure targeting the C&I sector because of the commercial risks associated with feedstock security.

⁴ While weighing systems can be integrated into the lift mechanism for commercial collection vehicles, in order to obtain an accurate reading it is generally necessary to lift the container off the ground, then pause until it is stable enough to take a weight reading. This small amount of additional time can still be a significant issue for contractors.

Unlike the MSW sector, where a council may aggregate a significant volume of feedstock and enter a long-term processing agreement with a private sector operator, collection and processing arrangements in the C&I sector are generally negotiated on a business-by-business basis. Each individual private operator may hold a significant number of short-term, low volume contracts. But the lack of long-term, high volume contracts reduces future certainty around feedstock levels, providing a major barrier to justifying investment in processing technology.

Due to the issues outlined above, there is currently a lack of infrastructure capacity for sorting mixed C&I wastes in Australia, especially compared with the C&D or MSW sectors. There are also examples where infrastructure commissioned on the expectation of processing source-separated C&I wastes have been unable to attract the required feedstock to remain commercially competitive (see Appendix 2 for discussions from the Stakeholder Workshop).

Even where an individual C&I waste generator is keen to adopt source separation, it may be unable to easily (or effectively) adopt the systems unless a range of external parties – such as landlords, other tenants, cleaners and property managers – also support implementation.

The Richmond Review identifies five key factors that determine whether and how recyclables will be handled in the NSW C&I sector. Hyder considers it likely that these general factors will be of relevance in all Australian jurisdictions⁵:

- 1 Availability of space for bins** – businesses may have insufficient space for multiple bins (internally or externally) to source separate materials or to aggregate separate streams of material. In these cases, other than direct disposal at landfill, the only option if available is to recover resources from mixed waste materials at a C&I materials recycling facility (commonly referred to as a 'Dirty MRF'). However, as outlined above, there are barriers to developing this infrastructure and a current lack of capacity to process mixed C&I wastes in most jurisdictions.
- 2 Price signals** – businesses may be deterred by the cost of recycling. This includes not only the lift price but also perceived costs associated with source segregations compared to the use of a single mixed-waste bin. This is believed to be particularly true in the SME sector (where businesses may consider they lack labour resources to source separate).
- 3 Types of waste generated** – the composition of the waste generated by a business will determine the kind of recycling system that can be provided and used effectively.
- 4 Variable service offering** – different waste contractors may have access to different infrastructure, and this will affect the nature of the service they can offer C&I generators. This may present issues for C&I generators that operate across multiple locations, in terms of making it difficult to adopt a company-wide waste management strategy.
- 5 Other non-price barriers** – around a quarter of businesses in NSW do not have source separation bins for paper. As these are currently offered at a very low price, the Richmond Report concludes that lift price is not a primary barrier: inertia, transition costs (including education, administration and space constraints) appear to be the most likely obstacles. Many C&I generators may lack general knowledge of what can be recovered from the waste stream, and how to go about changing services and contracts.

⁵ Note that Hyder has amended and expanded discussion around these five points identified in the Richmond Review

2.1 PLACE-BASED APPROACHES TO C&I WASTES

The proceeding section identifies a variety of reasons that programs and policies which may be effective at influencing waste and recycling outcomes from the C&D or MSW streams may not be effective at influencing C&I performance. C&I waste generation happens in different ways and to different extents across the Australian economy and geography. As a result, government policies and programs may need to be tailored to local patterns of C&I waste generation, service provision, recovery and landfill disposal behaviours.

The C&I waste types generated will depend, to a large degree, on the type of commercial activity taking place. For example, a commercial office building would generally be expected to generate a relatively high portion of paper wastes, while a food court may generate a relatively high portion of putrescible organic wastes, and a warehousing facility may generate a relatively high portion of timber wastes (such as pallets).

In situations where a number of individual business undertake activities that produce similar waste streams, it may be possible to develop waste management systems that improve efficiencies and resource recovery performance. For example, where there is a high density of office buildings in a certain area, collection service providers may be able to develop collection run patterns that allow paper recycling services to be offered more cheaply than would be possible with an isolated individual generator. This lower cost barrier may in turn lead to a higher uptake of a paper recycling service by C&I waste generators in that particular area (or precinct).

The premise of this current study is that it may be possible to improve C&I performance by encouraging, in a more systematic manner, the identification and greater exploitation of place-based opportunities, such as the example outlined above. A range of possible options for achieving this are outlined and discussed in the later sections of the report.

Places (or precincts) may be of scales ranging from a single building or block, to a suburb, an area of a whole city, or a whole city. The approaches considered in this study are distinguished by not applying at scales beyond a city (such as to an entire State).

The terms 'precinct' and 'place' are used throughout this report, in many cases interchangeably. However, it should be noted that 'place' can refer to smallest-scale applications (such as within a single building or block) up to largest-scale applications (such as to a whole city). The term 'precinct', meanwhile, excludes the smallest-scale applications.

A wide range of potential approaches are considered in this report. Some of these approaches (such as landfill bans) may be most suited to being applied at a city-wide scale, while other approaches (such as waste matching initiatives) may be more suited for a more localised scale. It is therefore not possible to provide a single, definitive statement of what is considered a 'place', other than to say it is at a smaller scale than a jurisdiction-wide approach.

The specific goals of the approaches considered in this report are equally broad. The primary driver for some approaches, in some areas, may be to improve amenity and safety issues associated with vehicle movements and bin storage. Other approaches may be considered primarily in order to reduce waste to landfill. The general purpose of place based approaches, in the context of this report, is to improve C&I waste management performance and efficiency, and/or precinct amenity.

3 PROJECT OBJECTIVE AND RATIONALE

The National Waste Policy Implementation Section of the Australian Government Department of Sustainability, Environment, Water, Population and Communities (the Department) is part of a C&I/C&D Working Group made up of representatives from each Australian jurisdictional government. The Working Group identified place-based approaches to C&I waste were of significant interest to several jurisdictions. The Australian Government therefore commissioned this project in order to streamline investigations and improve efficiency compared with each jurisdiction potentially undertaking separate investigations of the same topic.

The waste and recycling issues faced by a specific C&I generator may be more related to the business type than its location. For example, the waste profile from an office building in Perth is likely to be similar to the waste profile of a similar office building in Sydney. It can be reasonably assumed there would be many common opportunities and barriers related to improving performance in each of these businesses (for example, regardless of the building location, it will be important that there is sufficient space to introduce an additional collection container in order to implement a paper recycling service).

Understanding the experiences of one jurisdiction in attempting to improve C&I outcomes using place-based approaches may therefore help other jurisdictions to replicate successes and avoid repeating any mistakes made by other groups.

The objective of this report is therefore to provide a concise summary of some place-based approaches to C&I wastes that have been trialled in Australia, and provide some discussion of the advantages and issues that may be associated with these general approaches.

The central attraction of place-based solutions is that they can be tailored to meet local conditions. It is important to note that, while this study provides a national overview of various place-based approaches, and has been commissioned by the Australian Government, the objective is clearly not to identify any place-based approach that should be applied nationally.

The Department identified the following general types of place-based options to be outlined:

- 1 Precinct or place-based licensing
- 2 Place-based direct investment
- 3 Place-based restrictions on direct landfill disposal
- 4 Waste catchment analysis
- 5 Waste matching initiatives
- 6 Minimum recovery / recycling standards
- 7 Opportunities to enhance the uptake of NABERS Waste.

Each of these general types is discussed in more detail within the following chapters, with general conclusions and recommendations about place-based approaches to C&I waste provided in Chapter 11, and a summary of discussions from the Stakeholder Workshop provided as Appendix B.

As shown in this report, there have been multiple attempts at implementing local, tailored approaches to C&I waste management in Australia. This study was commissioned to provide an overview and analysis of these various attempts, and to gather views of relevant stakeholders on their effectiveness. Detailed evaluation of the cost and effectiveness of the various examples was not possible. This project aims to provide a concise summary of recent experience with these systems, which can be used by policy makers and program designers to help inform their decisions about the feasibility and likely effectiveness of place-based approaches to C&I.

4 PRECINCT OR PLACE-BASED LICENSING

Description: Precinct or place-based licensing of collection service providers, attached to minimum service coverage requirements. For example, as a condition of licence, all commercial premises in the licence area might need to be provided with a commingled C&I recycling bin and appropriate collection service. Allocation of areas to licensees could be based on auctioning, competitive tender or similar processes.

4.1 RELEVANT EXAMPLES

4.1.1 GOLD COAST CITY COUNCIL

Gold Coast City Council in Queensland (GCCC) has operated precinct based collections in two particular high-density tourism precincts for more than 10 years (at Broadbeach and Surfers Paradise). The main driver for GCCC in developing this approach was lessening the amenity and safety impact for tourists by minimising collection truck movements, and to have more control over the standard of service and timing of collections.

The waste comes mostly from high rise hotels and apartment blocks, and while waste material is commonly mixed within a single bin, it is considered approximately 35% C&I and 65% MSW.

One contractor currently services both precincts, under contracts awarded by open tender. It collects residual waste and commingled recyclables. Some businesses within the precincts also have separate paper and cardboard recycling services, and potentially other services (such as grease trap collections) that fall outside of the GCCC licensing system and are therefore serviced by third party contractors.

Businesses within the precincts are charged for the C&I waste service through their rates (compulsory) and there is an additional charge for access to the commingled recyclables service (non-compulsory).

The benefits highlighted by GCCC are improved amenity for tourists and residents (through reduced vehicle movements, and more controlled collection times), logistical efficiencies, and improved access to recycling services for C&I generators within the precincts.

4.1.2 SUNSHINE COAST REGIONAL COUNCIL

Sunshine Coast Regional Council in Queensland (SCRC) currently provides a compulsory C&I collection service, charged via rates, throughout the whole LGA. It provides bulk residual waste bins and commingled recyclables services, plus cardboard collections as required.

Advantages highlighted by SCRC include collection efficiencies, improved amenity in tourist areas, improved segregation and recovery opportunities, and potential to gain sufficient feedstock to potentially justify development of advanced waste treatment options⁶. Council currently provides access to recycling services at no additional cost to business.

At the time of publication, however, this arrangement was under investigation by the Queensland Competition Authority (with a ruling expected May-June), due to contractor complaints that the arrangement is anti-competitive.

⁶ www.sunshinecoast.qld.gov.au/sitePage.cfm?code=waste-strategy-development

4.1.3 CITY OF MELBOURNE

On 1 July 2010 the City of Melbourne (CoM) amended its *Activities Local Law 2009* to require waste contractors within the 'central city' precinct to apply for a permit (see Figure 4-1 for map). The *Activities Local Law* enables the CoM to impose certain permit conditions on contractors, including in relation to data collection requirements and collections times.

It is understood that CoM considered whether the permit system could be used to limit the number of waste service providers operating in the central city. However, legal advice obtained by CoM suggested that such steps may breach the (then) *Trade Practices Act*. The *Activities Local Law* and associated permit system does not place any restrictions on the number of waste companies collecting in the central city.

In order to register for a permit, companies must provide information including:

- full contact details for the applicant
- the registration numbers of all waste vehicles collecting waste within the central city
- number of general waste bins serviced within the precinct (by size- 120L, 240L, 660L, 1100L, 1.5m³, 3.0m³ or 4.5m²)
- number of paper & cardboard bins serviced within the precinct (by size)
- number of commingled recycling bins serviced within the precinct (by size)
- details of other bins serviced within the precinct (with potential examples including '400 oil drums' or '200 x 50L bins of crushed glass' or '80 x 240L organic food waste for recycling')
- total number of collections made within the precinct per week (number of lifts per week).

All permits to collect waste in the central city precinct are issued subject to conditions that must be obeyed, or the waste company will be in breach of their permit and may risk a fine. A typical permit may include the following conditions:

- keep an up to date bin database to allow bin ownership to be tracked, with each bin required to have a unique identifiable number
- all collection trucks labelled with waste company name and contact details
- within designated areas, only collect waste between 6am and 11pm.

Issue raised by various stakeholders during consultation with the CoM about the permitting system have been documented⁷ and made publicly available. It is noted that of the four residents who provided feedback, each was supportive of actions that may reduce early morning collection noise.

4.2 POTENTIAL ADVANTAGES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following advantages are identified as being potentially associated with precinct or place-based licensing approaches:

- more efficient collection runs, with reduction in truck movements and associated impacts (noise, congestion, emissions) and more control over collection times in the precinct

⁷ www.melbourne.vic.gov.au/AboutCouncil/Meetings/Lists/CouncilMeetingAgendaItems/Attachments/4621/5.2.pdf

- can set minimum service standards (e.g. provision of commingled recycling service)
- easier to monitor and manage if there is a single port of call with contractors
- the opportunity to choose the disposal / processing pathway for collected materials.

4.3 POTENTIAL ISSUES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following issues are identified as being potentially associated with precinct or place-based licensing approaches:

- difficulties identifying an appropriate body to coordinate such arrangements (for example councils, or a local business chamber)
- different businesses may have widely different service requirements, unlike the municipal sector where there is general uniformity in terms of bin sizes and collection frequency
- resistance from collection service providers if implementation of such approaches impacts on existing businesses, or if profit margins associated with a joint arrangement are lower than the profit margins on individual arrangements
- may lead to a 'lowest common denominator' outcome that stifles potential innovation in terms of increased resource recovery by some individual businesses
- difficult to guarantee efficiency improvements and other desired performance outcomes, which may make it difficult to pass public interest tests
- increased bureaucracy will lead to frustration if no clear benefits are evident.

4.4 MAJOR BARRIERS TO IMPLEMENTATION

The major barriers to implementation associated with this option include:

- significant competition and consumer protection issues, meaning it may be necessary to navigate the ACCC public interest exemption process to gain regulatory approval
- in the case of Local Governments, competitive neutrality issues must be considered
- a lack of data on collection service requirements (and changing requirements over time as, for example, activities of business within the precinct change) may present a major barrier to effective system design
- additional barriers relating to the coordinating body – for example, corruption concerns with local councils⁸ – will also need to be considered and carefully managed.

4.5 CONCLUSION

Place-based licensing could potentially be used to address a range of concerns within a specific precinct. Several of the examples outlined above appear to have been driven primarily by the desire to improve amenity within the target areas, although it would be equally possible to design systems in order to address a range of other concerns, including waste generation and resource recovery performance.

⁸ For example as outlined in the Independent Commission Against Corruption (ICAC) report, *Taking the whiff out of waste – Guidelines for managing corruption risks in the waste sector* (November, 2002),

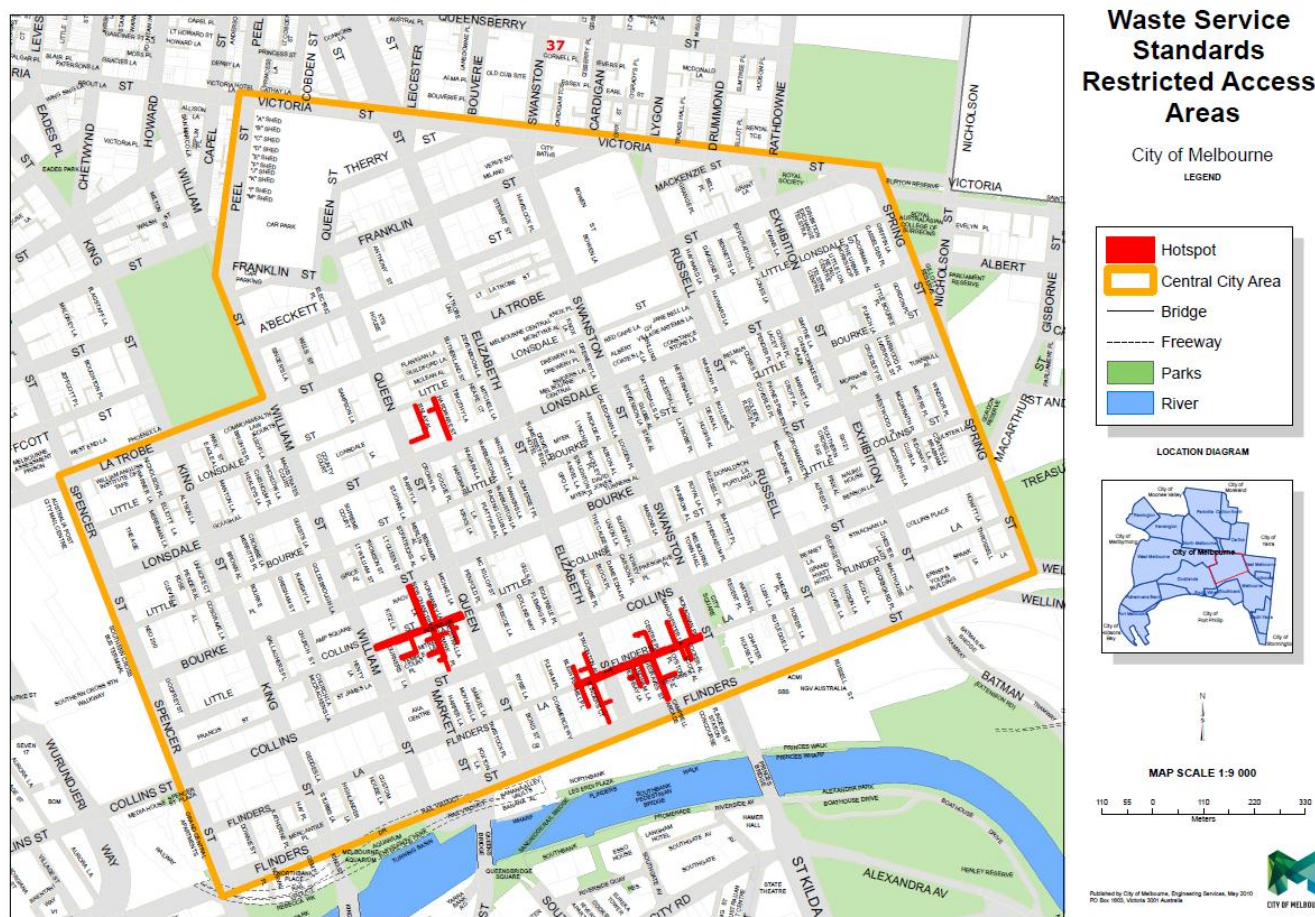
A major issue with this style of approach is industry resistance due to competition concerns, and the significant potential for such an approach to expose the proponent to legal risks associated with breaches of the *Competition and Consumer Act 2010*.

In order to gain ACCC approval for such an approach, it would be necessary for the proponent to satisfactorily demonstrate it would be in the public interest. This may be possible in some situations, although it is noted that ACCC approval does not exempt the proponent from potential third party action under the Act.

Whether improved performance outcomes might outweigh the legal risks associated with implementation of such an approach would need to be carefully considered on a project by project basis. Proponents should seek specific legal advice prior to implementation.

It is important for potential proponents to note that this style of approach to improving C&I outcomes is not without risk, appears likely to be poorly viewed by waste contractors, and may therefore be difficult to successfully implement.

Figure 4-1 Map of City of Melbourne central city precinct⁹



⁹ www.melbourne.vic.gov.au/enterprisemelbourne/waste/citywaste

5 PLACE-BASED DIRECT INVESTMENT

Description: Place-based direct investment (or co-investment) for specific infrastructure and/or service provision. For example, this may include investment in local digesters for restaurant and cafe precincts, commingled recyclables bins for small clusters of high-street shops, or mixed C&I materials recovery facilities for cities.

5.1 RELEVANT EXAMPLES

5.1.1 HAZELMERE TIMBER RECYCLING

The Eastern Metropolitan Regional Council (EMRC) in Perth identified a large grouping of cabinet makers in the local government area, which all had similar issues with wood waste. An initial study was undertaken to quantify the scale and composition of the waste stream, and this identified sufficient volume to warrant further consideration of options.

A follow-on study then looked at potential markets for recovered wood waste, and identified sufficient potential demand to justify further investigation.

On the basis of these preliminary studies, the EMRC invested in development of a basic wood waste processing facility, which involved provision of a hard-stand area and a basic shredder for the material. While rudimentary, this setup was sufficient to demonstrate the concept.

Following positive uptake by the C&I waste generators (due to attractive pricing compared with mixed waste collection), there was an interim expansion of the processing facility, which was part funded by the State Waste Authority. As processing demand ramped up, the EMRC (which owns and operates the facility) invested in a >\$1million upgrade during 2011.

The EMRC has since followed a similar direct investment model for mattress recycling¹⁰.

5.1.2 CITY OF MELBOURNE DEGRAVES STREET TRIAL

The City of Melbourne (CoM) has publicly discussed¹¹ the potential for undertaking a Designated Waste Collection Area trial project that would potentially involve provision of a bio-digester for food waste, a glass crusher unit, and a baler for plastics and paper/cardboard. The concept involves storing this infrastructure in a single location, such as the basement area of a specific building within the precinct.

It is estimated the total waste generated in the Degraives Street/Centre precinct is approximately 300 tonnes per annum and, based on discussions with café and restaurant owners in the precinct, CoM understands 70% of this waste stream is comprised of recyclable material.

There are currently 40 bins stored permanently in the area, but it is expected that up to 30 of these may be made redundant through introduction of the trial program.

The cost of equipment to support the trial is estimated at approximately \$80,000, with site rental approximately \$25,000 p.a. Two part time staff may be required to operate the equipment, at an

¹⁰ www.emrc.org.au/hazelmere-recycling-centre.html

¹¹ www.melbourne.vic.gov.au/AboutCouncil/Meetings/Lists/CouncilMeetingAgendaItems/Attachments/9335/Agenda%205.1.pdf

estimated minimum cost of \$150,000 p.a. At this stage the cost of utilities and transport of the recyclables away from the site, and performance outcomes, are unknown.

The trial may potentially be jointly funded by the CoM and the Victorian Government, although the project (for which preliminary work started in mid-2011) is currently on hold. This is partly due to state planning regulations that prohibit operation of a commercial composting facility in the city zone, with installation of a bio-digester therefore requiring a ministerial exemption.

5.1.3 IMPERIAL COLLEGE LONDON - FOOD WASTE

The Imperial College London has implemented a series of initiatives to increase recycling rates, as part of an ambitious Waste and Recycling Strategy that set an internal target of increasing the College's overall recycling rate from around 19% in 2007–08 to 40% by the end of 2010–11. Imperial College has over 13,000 full time and 1000 part time students enrolled at any one time, plus over 6000 staff including academic, research and support personnel.

Recognising food waste as one of the most significant waste streams at the College, a major initiative has been the installation of a food waste disposal system that enables on-site collection and composting of food waste.

The College opted to build a self-contained building, referred to as the 'CompPod', in which to house various components of the system, including a waste sorting table, food waste disposer (incorporating macerator and de-waterer) and an in-vessel composting system.

More than 1 tonne of food waste is now composted on site every week, originating mainly from the campus dining halls and cafes.¹²

Figure 5-2 Imperial College London's self-contained 'CompPod' food waste processing building



¹² www.imco.co.uk/cateringcasestudies/worldfirstforimcandimperialcollege

5.2 POTENTIAL ADVANTAGES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following advantages are identified as being potentially associated with place-based direct investment (or co-investment):

- ability to target isolated precinct / specific grouping of C&I waste generators with provision of directly relevant infrastructure
- clear mechanism to monitor uptake and performance can be established, assuming sufficient stakeholder consultation and support prior to infrastructure provision
- potential for very high resource recovery rates in some instances, helping develop showcase examples that can be used in driving further investment
- ability to address specific issues within a precinct.

5.3 POTENTIAL ISSUES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following issues are identified as being potentially associated with place-based direct investment (or co-investment):

- finding a suitable location close to the precinct to store the required infrastructure / equipment, and having sufficiently skilled operators for equipment
- requirement for someone to fund capital costs of infrastructure, as well as the on-going operation of equipment
- requires commitment by businesses within the precinct to support and appropriately use the specific infrastructure, and a champion for the cause
- may present competition concerns if C&I generators are 'forced' to use the system.

5.4 MAJOR BARRIERS TO IMPLEMENTATION

The major barriers to implementation associated with this option include:

- Detailed stakeholder consultation required to determine demand and potential uptake, requiring a high degree of good-will among potential users
- Exposes funding organisation to technology / commercial risk they may be unwilling to bear
- Planning and development obstacles may need to be overcome.

5.5 CONCLUSION

Based on the collective experience of those stakeholders contacted for this project, critical success factors associated with the development of resource recovery infrastructure include security of feedstock, and security of markets for end products. This is equally relevant for any infrastructure development, regardless of whether it is to service a particular precinct.

Security of feedstock may potentially be improved through taking a place-based approach to infrastructure development, in so far as this may encourage (and enable) the proponent to engage with a specific grouping of C&I waste generators and develop a processing solution custom-designed to meet their specific needs.

There are multiple examples where development of specific infrastructure has allowed greatly improved performance for a specific waste stream. However, unless there is on-going demand for the end products, the recovery systems will ultimately be unsuccessful.

Recent Australian experience has highlighted risks associated with global commodity demand and price fluctuations. In some instances these fluctuations have led to the collapse of the business model underpinning specific infrastructure.

We consider there is potentially a very high degree of merit in encouraging the development of infrastructure to meet a specific need within a precinct via direct investment. However, proponents need to develop a detailed understanding of the waste stream, develop technology suitable for processing that material, and be able to develop or access robust markets for the final outputs. Efforts to address C&I data gaps may help improve the viability of these options.

Direct investment efforts are likely to be most effective when a 'champion' identifies a potential opportunity and drives a local solution. This champion could be a local council (although many will not have the required data or resources), a private contractor (which may have data and resources, but would need to see a commercial benefit), or a C&I generator / group of generators that identifies an opportunity to improve their own performance.

6 RESTRICTIONS ON DIRECT DISPOSAL

Description: Place-based restrictions on direct landfill disposal. This could include landfill restrictions, or bans on mixed C&I waste being disposed of to landfill from a collection service area/catchment unless it has been subject to an appropriate process of sorting, recovery or treatment (such as the South Australian approach).

6.1 RELEVANT EXAMPLES

6.1.1 SOUTH AUSTRALIA

The *South Australian Environment Protection (Waste to Resources) Policy 2010* (W2R EPP)¹³ provides regulatory underpinning for South Australia's Waste Strategy. A key feature of the W2R EPP is the introduction of provisions prohibiting the disposal of certain waste types to landfill. The first landfill bans came into effect in September 2010, covering materials including lead acid batteries, whole tyres, and hazardous waste.

As of 1 September 2012, all metropolitan Adelaide waste (subject to exemptions) will be banned from landfill unless it is first subjected to resource recovery "in accordance with the waste management hierarchy and to the extent reasonably achievable".

Exemptions from this requirement can be applied for, such as in instances where no market exists for a material or end-product. An exemption will also be granted for residual household waste, where a council provides a three-bin collection service to residents. However, the current intention is for all commercial mixed waste to require some form of resource recovery treatment prior to landfill disposal, regardless of whether that C&I generator has source-separation systems in place for specific materials.

That ban on unsorted mixed waste will be significantly more complicated to police than the current bans on specific material streams. It is much simpler to visually establish if a specific item, such as a lead acid battery, has been disposed to landfill, compared with needing to establish mixed residual waste has been subject to an appropriate level of resource recovery.

Zero Waste South Australia believes that it will be possible to establish whether or not a processing facility is achieving appropriate resource recovery based on a mass balance comparing total tonnes with residual tonnes from the facility that are disposed to landfill. However, the W2R EPP has been specifically designed so that it is to make amendments relatively quickly and refine the system as more data becomes available after implementation of the various stages of the landfill bans.

The landfill bans have been more than 10 years in development. ZWSA began assessing data on material flows and issued a discussion paper in 2000 that flagged many of the current directions, including banning the disposal of certain materials to landfill and introducing a requirement that all waste destined for landfill must first have gone through some process of resource recovery.

¹³ www.epa.sa.gov.au/environmental_info/waste/legislation/waste_to_resources_policy

The *Draft Environment Protection (Waste to Resources) Policy and Explanatory Report* was issued in early November 2008, marking the beginning of intense consultation on the proposed landfill bans. Sixty written submissions were received from local government, industry and others through the formal consultation process, which ended in late February 2009.¹⁴

The W2R EPP was authorised by the State's Governor in February 2010 and landfill bans apply progressively from September 2010 to September 2013, with the staged approach designed to provide time for the development of markets and infrastructure to support the bans.

The long lag time has allowed for detailed stakeholder engagement, as well as development of supporting systems to underpin the implementation of the bans. Critically, all waste collectors, transporters and processors now require a license to operate in South Australia. The licencing system allows the South Australian Government¹⁵ to apply certain conditions on market participants, such as data collection and reporting, which will allow it to monitor performance against the intentions of the policy, and undertake enforcement actions as required. Additional resources have been provided to the EPA in order to increase compliance activities.

The formal consultation process for the W2R EPP implementation is covered in Section 28 of the *South Australian Environment Protection Act 1993*. As part of this process, more than 14 meetings with key stakeholders (including councils, community groups, business and private operators) have taken place over the past 10 years.

The W2R EPP does not enforce segregation of commercial waste, although this is "something that is encouraged". It is at the discretion of the business if the business separates the waste before it is collected for disposal, however the government advises that "the cost of resource recovery will likely increase waste disposal costs therefore it may be more cost efficient if the business separates the waste themselves before it is collected for disposal".

Requirements for waste processors and landfill operators to develop and submit Waste Management Plans will be a key mechanism allowing the government to monitor performance and compliance.

ZWSA stakeholders consulted for this project reported that major waste companies in Adelaide have generally been willing to provide data to help support the Government's policy direction, so long as there is appropriate protection of commercially sensitive information.

A key incentive for operators to support the government's direction appears to be the perceived benefits in having a "level playing field" where those operators who have invested in resource recovery infrastructure cannot be under-cut by operators offering cheap landfill disposal. This will help stimulate further investment in resource recovery infrastructure, especially 'dirty MRF' style facilities for recovering resources from mixed commercial wastes generated in the Adelaide area.

¹⁴ http://www.epa.sa.gov.au/xstd_files/Waste/Public%20consultation/waste_policy_response.pdf

¹⁵ ZWSA has an advocacy and funding role in relation to implementation of the W2R EPP while the SA EPA undertakes compliance activity. The two bodies receive an equal 50:50 share of all waste levies raised in the state.

6.1.2 ORANGE CITY COUNCIL

Planning conditions imposed on Orange City Council's Orange Waste Project¹⁶, following a lengthy and highly disputed approval process, will have an effect similar to a landfill ban on untreated/sorted waste being disposed directly to landfill in this region.

Orange City Council's original proposal for a landfill and resource reprocessing facility (the Hub Waste Management Proposal) was met with strong opposition from a community group, the HUB Action Group, which argued that the project failed to include sufficient commitment to resource recovery and could have an impact on the surrounding environment, particularly the local bee keeping industry.

The proposal was eventually rejected by the NSW Land and Environment Court. Following a strategic review of the Council's waste strategy, a revised approach was adopted. The subsequent proposal has gained planning approval, but has been subject to almost 80 planning conditions.

The Project Approval specifies the council, "shall implement all reasonable and feasible measures to recover resources from the waste stream"¹⁷ and further imposes requirements to implement a specific program to increase the separation of food wastes from the C&I waste stream. A Waste and Resource Recovery Monitoring Program is also required, to monitor waste quantities, types and sources, and assess the effectiveness of the resource recovery at the site.

All residual waste must go through certain pathways before it reaches the landfill, and following resource recovery it must be shredded, baled and wrapped in plastic before being transported to the landfill. This provides a further incentive to reduce disposal volumes, given the cost of preparing and transporting material, especially as transport options have also been curtailed in the consent conditions, with limits applied on the number of truck movements on certain roads.

The council's overall resource recovery rate is anticipated to improve from approximately 20% to 58% as a result of the project.

While the outcomes are not specific to C&I waste, this waste stream will be strongly influenced in the Orange region by the planning conditions applied to the new landfill development. Given increasing community concerns about new landfill developments in most Australian areas, there is potential for other developments to be subjected to similar planning conditions, which may have a place-based effect of banning disposal of unsorted mixed waste to landfill.

6.2 POTENTIAL ADVANTAGES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following advantages are identified as being potentially associated with place-based restrictions on direct landfill disposal:

- the only place-based approach considered in this report that is almost guaranteed to result in higher resource recovery rates.
- smaller regulatory footprint than some other possible approaches, in that it does not require direct engagement with all C&I generators or necessarily any amendments to their existing practices.

¹⁶ www.orange.nsw.gov.au/site/index.cfm?display=267052

¹⁷ Minister for Planning (2010), *Project Approval: Orange Waste Project*, Application No. 09_0025, 28 April 2010.

- provides increased certainty of feedstock for businesses that are seeking to invest in processing and resource recovery systems for C&I waste.
- European experience suggests significant increases in resource recovery rates are possible. For example, German bans on 'untreated' waste to landfill increased diversion rates from 73% to 99% over the space of 6 years¹⁸ (note that ash from waste subject to energy recovery is considered 'treated').

6.3 POTENTIAL ISSUES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following issues are identified as being potentially associated with place-based restrictions on direct landfill disposal:

- there is no point banning items from landfill unless there is a clear alternate pathway for that material; without sufficient resource recovery options, the material may only be stockpiled
- requires sufficient lead time for development of required alternate pathways, and therefore has a significant lag time prior to achieving tangible outcomes
- will need to be supported with a range of other appropriate reforms, such as licensing systems that can allow the regulator to efficiently and effectively enforce compliance
- burden of resource recovery is on processors / landfill operators, and may not encourage behaviour change within individual businesses
- is likely to increase overall waste management costs
- difficult to enforce and will require significant resources to monitor each load of waste delivered to a disposal site.

6.4 MAJOR BARRIERS TO IMPLEMENTATION

The major barriers to implementation associated with this option include:

- requires development of alternate processing pathways for materials, and therefore may involve significant lag time prior to outcomes being achieved
- would require significant resources to ensure compliance, which may not be readily available in all jurisdictions.

6.5 CONCLUSION

There is significant potential to encourage much higher resource recovery rates by banning the direct disposal of waste to landfill. Indeed, of the various options considered within this report, landfill bans are the only approach which would be almost guaranteed to improve resource recovery levels. However, implementation of such bans would involve major market reform in most Australian jurisdictions, would be likely to increase total waste management system costs, and may therefore meet with significant resistance and be very difficult to implement.

¹⁸ Landfill ban investigation (2010), undertaken by Hyder for the Department of Sustainability, Environment, Water, Population and Communities: www.environment.gov.au/wastepolicy/publications/landfill-ban.html

It was noted by one Stakeholder Workshop participant that South Australia is “light years ahead” of other Australian jurisdictions in terms of waste policy and direction, and that even if the ban on mixed waste to landfill that comes into force on September 1, 2012 is highly effective in Adelaide, it may not be readily repeatable in other places.

In an area where there are multiple disposal options, such as is the case in Adelaide and most other Australian metropolitan centres, it would be extremely important for the implementation of landfill bans to be supported with a very robust enforcement system. In order for legitimate operators to have the confidence to invest in processing infrastructure, they will need to be very confident they are competing on a level playing field, and that if their competitors flaunt the system they will be quickly dealt with by the regulator.

In areas where there may only be one disposal option within viable transport distance for most C&I generators, such as is possibly the case in Orange, development consents and license conditions could be used to drive improved performance by effectively banning the disposal of unsorted waste at a specific, critical facility. However, it is generally accepted that commercial waste streams can be very mobile and may be transported long distances in order to secure lower processing / disposal charges.

In Hyder’s experience working with regional groupings of local councils, we are aware of several examples where increases to disposal costs for commercial wastes at one facility can lead to that council seeming to achieve very large decreases in commercial waste generation rates, while its neighbouring councils see a major increase in commercial waste loads.

The application of ‘bans’ on a specific disposal facility could, in some cases, lead to a perverse outcome in relation to C&I wastes. This may occur if conditions imposed at one facility encourage longer distance transport of material to other sites, and / or the eventual disposal of material at a facility that has lower environmental standards and controls.

A clear understanding of the impact that South Australia’s landfill bans have on Adelaide’s C&I waste generators will be of great use to any other jurisdiction in considering adoption of such an approach. However, it will be some time before there is sufficient data available to adequately assess the impact and effectiveness of the scheme. This should not necessarily be used as a justification to delay progress in other places, given the need to undertake complementary reforms (such as development of licencing systems) which could have a positive impact on C&I outcomes in a given area, regardless of whether landfill bans were eventually imposed.

Figure 6-3 Adelaide's largest recycling facility, commissioned by Integrated Waste Services (IWS) and the Southern Region Waste Resource Authority (SRWRA) in response to the impending landfill bans. The \$4 million facility will open late 2012 and process 50,000 tpa, diverting 75% from landfill



7 WASTE CATCHMENT ANALYSIS

Description: Waste catchment analysis. Options under this category include trying to develop fine-grained, spatially-accurate understanding of waste generation and landfill diversion opportunities. For example, this could involve consideration of using RFID¹⁹ tagging of bins, truck-based global positioning system's (GPS) and lift-weight recording to compile real-time and spatially-accurate data on actual flows of C&I waste and recycling, based on defined precincts or service areas.

7.1 RELEVANT EXAMPLES

7.1.1 REGIONAL ORGANIC WASTE MAPPING PROJECT

Zero Waste SA (ZWSA) is currently undertaking a Regional Organic Waste Mapping project. Stage 1 is a pre-feasibility study to gain better understanding of the type, amount, and location of current and future potential organic waste streams in defined areas.

A better understanding of organic waste generation patterns and material flows will allow ZWSA to deliver more tailored solutions to further enhance the organics market. This may potentially include further development of advanced processing technologies for organic waste streams in order to complement the existing infrastructure mix. Existing infrastructure includes numerous windrow composting facilities, as well as some more technically advanced facilities for processing source separated food and garden organics.

Part of the Organic Waste Mapping project is identifying current commercial reprocessing arrangements, and factors influencing regional recycling economic feasibility. In 2009–10, ZWSA also completed the *Recycling Industry Investment Review*²⁰, which involved consultation with the recycling industry, projecting future recycling infrastructure needs, and considering investment opportunities.

The ZWSA *Business Plan: 2011-12 and Future Directions: 2013-14* outlines a State Government commitment to providing \$7.3 million over four years for investment in key waste infrastructure across South Australia. Priority projects will be partly determined based on findings from the investment review in 2010–11.

A solid understanding of materials generated and processed through different pathways, and within various waste catchments (or 'places'), will allow ZWSA to target its support for appropriate infrastructure development and achieve maximum impact through its grant processes.

7.1.2 'BLACK BOX' INFORMATION BROKER CONCEPT

The waste sector is not the only area of the economy where detailed information would be of great use in planning better approaches, but where there is limited access to this data due to commercial sensitivities. A potential solution to this, which has also been considered and trialled for other industry sectors, is to develop a 'black box' information sharing system.

¹⁹ Radio-frequency identification (RFID) is a technology that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum to uniquely identify an object. RFID can be used as an alternative to bar code systems, with the advantage of not requiring direct contact or line-of-sight scanning.

²⁰ www.zerowaste.sa.gov.au/resource-centre/publications

Development of this concept would involve a reputable organisation acting as an information broker, managing an information template and maintaining an information database. In return for supplying their own detailed information in relation to waste, organisations which agree to feed information into the 'black box' could be rewarded with access to aggregated results covering every participating organisation's data.

A similar approach is taken by the Waste Management Association of Australia (WMAA) in relation to the National Landfill Survey. The incentive for organisations to participate by providing information is the ability to benchmark themselves against the aggregated results. Organisations that require access to specific aggregated information can elect to pay for the data guardian to interrogate the underlying information and provide more targeted results (while still on an aggregated basis, to protect commercial sensitivities).

One of the critical barriers to developing such a system in relation to C&I waste and recycling data is likely to be the practical difficulties associated with gathering and recording useful data. As discussed during the Stakeholder Workshop, there have been multiple attempts to gather fine-grained data, although there are practical issues related to:

- the ability to quickly and accurately obtain lift weight data by container
- the ability to quickly and accurately obtain compositional data via a visual inspection.

While there are some practical barriers to gathering high-quality data on C&I waste and recycling at the individual business level that would need to be overcome, the development of a 'black box' information sharing system would potentially provide a cost effective mechanism for gathering detailed information on waste catchments. This information could be used to deliver more tailored solutions to improve C&I waste performance outcomes.

7.2 POTENTIAL ADVANTAGES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following advantages are identified as being potentially associated with waste catchment analysis approaches:

- access to reliable data supports evidence-based policy and program development
- allows for development of targeted infrastructure and programs responding to specific needs in the area
- potentially allow for optimisation of collection runs for contractors, enabling for example a more efficient recycling service if contractors know requirements of the various business groupings.

7.3 POTENTIAL ISSUES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following issues are identified as being potentially associated with waste catchment analysis approaches:

- potential resistance to anyone gathering this level of data, due to commercial sensitivities of the waste generators (RFID programs in the municipal sector have in some case lead to "big brother" accusations and a high level of resistance from waste generators)
- practical difficulties in categorising waste materials and even weighing individual bins in the course of normal collection activities
- could result in a huge volume of data being collected, and it would be a challenging task to fully interrogate the available information.

7.4 MAJOR BARRIERS TO IMPLEMENTATION

The major barriers to implementation associated with this option include:

- a lack of consistency in the approach to data categorisation and recording may limit the ability for results from multiple waste catchment analysis to be compared. Development of a nationally consistent approach to gathering and assessing this data, prior to widespread uptake of such approaches, would be advantageous but potentially difficult to achieve.
- the uptake and usefulness of such initiatives would depend on willingness of waste generators and private contractors to provide / gather / share the information, and there is likely to be resistance to any programs that introduce 'green tape'.

7.5 CONCLUSION

Access to accurate, fine grained detail on C&I waste generation and management approaches would undoubtedly be of great help in progressing efforts to improve C&I performance.

There is currently a lack of available baseline data in relation to business-specific C&I waste generation rates and material composition. This paucity of data is a major barrier to designing systems to achieve better C&I performance outcomes.

Hyder is aware the Department is progressing a major C&I data assessment project concurrently with this current project, with a final report expected to be available by the end of 2013. This may provide improved baseline data in relation to C&I waste issues, especially in relation to jurisdictional government sources, although it is unlikely that it will be able to capture all privately held information.

We believe it would be useful to further explore options for developing an information exchange system that could help to capture C&I data from private operators, in a manner that can be continually updated as new information becomes available. The first step would be canvassing conceptual interest among existing private operators, and identifying an appropriate organisation to potentially host and facilitate such an information exchange.

8 WASTE MATCHING INITIATIVES

Description: These options could include matching waste generators with collection service providers or users of wastes as resources.

8.1 RELEVANT EXAMPLES

8.1.1 KWINANA INDUSTRIAL ESTATE

The Kwinana Industrial Area (KIA) was established in the early 1950s when the Western Australian Government negotiated an agreement with the Anglo Iranian Oil company (now BP) to construct an oil refinery. The agreement was formalised with the signing of the *Oil Refinery Act 1952*, and the rezoning of about 2400 hectares of coastal land for industrial purposes. This agreement fulfilled a major objective of the Western Australian Government, which was to establish an industrial base for the State's economy.

Over the following years the KIA became WA's primary area of industrial development, with major drivers being its proximity to the sheltered waters of Cockburn Sound, a ready supply of labour from Perth and Fremantle, and a willingness by the Government to develop a dedicated heavy industrial area.

The industrial development within the KIA consists of a highly diverse range of industries from smaller service industries, such as fabrication and construction facilities, through to very large heavy process industries, such as alumina, nickel and oil refineries, chemical manufacturers, a power station and a wastewater treatment facility.

The KIA is a commonly-cited example of 'industrial ecology' in Australia, which generally involves aiming to move industries toward a 'closed loop' system where waste products from one industrial process are reused within that process, or in another productive process.

The various industries in the KIA exchange resources, with more than 100 interactions between existing industries identified in a 2002 study. Examples of industrial synergies include: a chemical plant supplying food grade carbon dioxide to a utility gas provider; a chemical plant supplying gypsum for residue area amelioration at the alumina refinery; and the oil refinery providing hydrogen for a city bus trial and a neighbouring company.

The Kwinana Industries Council (www.kic.org.au) oversees the Kwinana Industries Synergies Project and works with Curtin University's Cooperative Research Centre for Sustainable Resource Processing (CSRP) and the Australian Research Council (ARC). As part of the research undertaken, input and output data about materials used and emissions produced by companies in the KIA is reviewed and analysed in order to identify synergy opportunities. Business plans are then developed to further assess the feasibility of implementing the identified synergies.

8.1.2 VICTORIAN WASTE EXCHANGE

The Victorian Waste Management Association and the Victorian EPA jointly established the 'waste eXchange' database (www.wasteexchange.net.au) that aims to help develop linkages between recycling companies and those operators who generate recyclable materials.

This website also claims to provide assistance, guidance, training and advice on many different forms of waste, with the aim of "enabling businesses to meet the objectives of sustainable waste management set by government".

Users can enter details of the waste stream they have, or the waste materials they have demand for, and the exchange serves to link the generator with potential user.

All negotiations resulting from initial contact facilitated through the waste eXchange database are held between the relevant parties, and do not include or involve the waste exchange administrator.

8.1.3 PLANET ARK BUSINESS RECYCLING WEBSITE

Planet Ark maintains a Business Recycling website (www.businessrecycling.com.au) and telephone hotline that are designed to help business waste generators find appropriate management and recovery options for their specific waste streams.

The rationale for developing these services (which the NSW Government helped to establish²¹) is that it can be difficult for a small business to find the reuse, recycling and waste services they need because many of these operators do not have the time or the experience in finding these types of services.

This Business Recycling website lists national and local re-use and recycling options for around 90 different materials, and includes a 'Search for service' function that allows users to simply identify nearby recyclers.

The website also includes a number of factsheets and links that provide general 'Recycling Information' about various materials, and provides other tools (such as downloadable signage that businesses can use to encourage at-work recycling).

A link to the *reThink Business Waste: A Guide to Reviewing Waste and Recycling Contracts and Service Agreements*, produced by the Queensland Department of Environment and Resource Management, is also provided. This guide is intended to help businesses to evaluate their waste management activities and secure the most appropriate waste contract for their individual requirements.

8.1.4 NATIONAL INDUSTRIAL SYMBIOSIS PROGRAMME (UK)

The National Industrial Symbiosis Programme (NISP)²² is a free business opportunity program that was established in the UK to deliver environmental, social and economic benefits. It is the first industrial symbiosis initiative in the world to be launched on a national scale, and it is delivered across the UK through a network of 12 regionally based offices across England, Wales and Scotland.

NISP aims to identify mutually profitable transactions between businesses so that under-used resources such as energy, water and/or materials from one can be recovered, reprocessed and re-used by others elsewhere in the industrial network. Locally, the Waste Management Association of Australia's NSW/ACT division has established an Industrial Ecology Working Group that aims to identify and exploit similar opportunities to NISP.

²¹ The website is also supported by Pitney Bowes, the Queensland Government and Zero Waste South Australia.

²² www.nisp.org.uk

While NISP is coordinated and delivered on a national scale, the opportunities exploited generally occur on a 'place-based' scale. NISP is publicly funded (partly using funds derived from the Landfill Tax) so that membership is free for all businesses, regardless of size, turnover or sector. It has over 13,500 member companies, including large corporates such as Shell UK and Lafarge Cement, as well as entrepreneurs and Small to Medium sized Enterprises (SMEs). SMEs make up over 90% of NISP's membership.

NISP encourages member companies to look beyond their traditional physical and sector boundaries, and brings together traditionally separate industries and organisations from all business sectors with the aim of improving cross-industry resource efficiency and sustainability. This involves the physical exchange of materials, energy, water and/or by-products, together with the shared use of assets, logistics and expertise.

The program is demand-led by industry, responding directly to the needs of business, whatever sector they may be in. It is nationally co-ordinated and regionally delivered throughout the UK. Each of the 12 regional teams works closely with a Programme Advisory Group (PAG) comprised of key industry representatives who give their time and expertise on a voluntary basis. The group assists the regional teams to ensure the program's direction is relevant for each region. PAG members include representatives from Shell UK, Arla Foods, Ricoh Products, Birse Civils, Veolia Environmental Services and Lafarge Cement.

Since the launch of NISP in 2005, the program has²³:

- diverted more than 5.2 million tonnes of industrial waste from landfill
- eliminated 357,000 tonnes of hazardous waste
- prevented the use of 7.9 million tonnes of raw materials
- delivered member cost savings of £131 million (AUD 210 million)
- generated £151 million (AUD 242 million) in new sales for members.

8.2 POTENTIAL ADVANTAGES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following advantages are identified as being potentially associated with waste matching initiatives:

- can unlock significant savings opportunities where one party reduces costs associated with disposing a 'waste' material and another party reduces costs associated with raw material inputs
- may encourage re-use of materials, which is a high priority on the waste hierarchy
- could link in well with other place-based approaches (for example waste catchment analysis) as part of the suite of options to improve C&I outcomes
- can provide tools for C&I waste generators to make the appropriate decisions regarding the management of their waste streams.

²³ www.ec.europa.eu/environment/waste/prevention/pdf/NISP_Factsheet.pdf

8.3 POTENTIAL ISSUES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following issues are identified as being potentially associated with waste matching initiatives:

- limited examples of one company's waste being in high demand by another company (with the exception of waste collection, processing and disposal companies)
- where there is a match between material wastes and needs, there may still be issues with physically transporting materials between the sites in a safe and economic manner
- requires commitment from one (or more) stakeholders to seek out opportunities
- it may be difficult to encourage the use of available tools, as not all C&I generators will be aware of the existence of such tools and/or may lack the internal resources to appropriately use the tools available.

8.4 MAJOR BARRIERS TO IMPLEMENTATION

The major barriers to implementation associated with this option include:

- significant resources may be required to adequately promote the existence of various tools / systems aimed at enabling waste matching, and there is not a guarantee C&I generators will use those tools
- while there is potential to custom-design industrial parks such that the various companies can benefit from 'industrial ecology' opportunities, it may be difficult to retrofit these concepts to existing business precincts
- it will be difficult to progress such waste matching approaches on anything other than an *ad hoc* opportunistic basis.

8.5 CONCLUSION

The development of specific waste matching initiatives that enable two (or more) businesses to achieve mutual commercial benefits by using the waste stream from one process as an input to another process, thereby eliminating waste and conserving resources, could be considered the pinnacle achievement of place-based approaches to C&I waste. A high value should be placed on pursuit of such opportunities, and it may be possible to reflect this in planning requirements for commercial developments. Despite being extremely worthwhile, however, it may be very hard to move beyond niche applications to exploit such 'perfect' opportunities on a wider scale.

The NISP provides an example where the central UK Government has committed significant resources to try and facilitate wider uptake of waste matching initiatives. In Australia, there is no equivalent federal mechanism to raise waste funds via a national Landfill Tax. It is theoretically possible for the Australian Government to facilitate a system jointly funded by the application of landfill levies in each jurisdiction, although this would be much more difficult to implement.

The KIA provides an example where central oversight of activity in a certain business precinct helps to identify (and implement) potential waste matching opportunities. Opportunities to promote the development of organisations with the capability to identify such waste matching opportunities within other business groupings should be further explored.

The availability of easy to use, freely available tools for connecting C&I waste generators with other stakeholders who can reuse or recycle (or provide other appropriate processing options) for their waste streams can help to address one of the barriers limiting C&I performance, being lack of access to appropriate information to make informed decisions.

The key problem with the approaches identified above is that there is generally little incentive for C&I generators to invest resources in identifying waste matching initiatives, given barriers outlined in Chapter 2 and including relatively low cost to business of waste disposal.

Integration of information on waste matching within existing jurisdictional programs for encouraging business sustainability outcomes (such as the ACT Government's 'ACTSmart' program, or the NSW 'Sustainability Advantage' program) could help to promote the potential for this suite of approaches to be utilised by C&I waste generators.

9 MINIMUM STANDARDS FOR GENERATORS

Description: Options for using existing regulation (such as licenses and planning approvals) or non-regulatory measures on generating businesses to require them to provide facilities for recycling, within certain precincts or service areas. These standards could be based on a principle of equivalence with kerbside collection service requirements offered to households in the same general service area.

9.1 RELEVANT EXAMPLES

9.1.1 CITY OF MELBOURNE ENVIRONMENTAL LOCAL LAW

The City of Melbourne's (CoM) *Environment Local Law (1999)*²⁴ is applicable to all business owners and occupiers within the CoM. The cornerstone is an Environmental Management Plan (EMP) which "sets objectives, performance requirements and prescribed requirements for activities that may affect the environment of the neighbourhood in which the activities are conducted".

Clause 3.3 of the EMP states that, "all necessary steps must be taken to ensure all recyclable material and green waste is separated from other waste material" (a Category 3 offence²⁵ carrying a penalty up to \$2000), although this clause is not enforced at the current time. Hyder believes it would be difficult to develop an objective system to assess whether "all necessary" steps have been taken, given differences between various C&I generators and practical difficulties in monitoring performance to ensure compliance with this clause.

An online-checklist, provided to help businesses within the CoM understand their environmental management responsibilities, includes the following statements:

- my waste and recycling bins are stored on the premises and only placed on the street before collection times
- empty milk crates, bread crates, beer barrels and any other containers are stored on the premises and only placed on the street before collection times
- cardboard, paper, crates and any other containers are stacked neatly and securely when awaiting collection
- my waste and recycling bins are kept in good condition and are not overflowing
- liquid wastes and hazardous wastes are not disposed of in the normal waste bins or down stormwater drains
- recyclable materials are separated from the waste stream
- every effort is made to reduce the volume of waste produced from my business
- the area immediately adjacent to the premises I manage or own is kept clean and hygienic
- steps have been taken to ensure cigarette butts are not littered outside the building I manage or own
- steps have been taken to ensure noise and emissions from my business or contracted services do not adversely affect the amenity of adjoining areas.

²⁴ www.melbourne.vic.gov.au/AboutCouncil/CouncilProfile/LocalLaws/Documents/Environment_Local_Law_2009.pdf

²⁵ www.melbourne.vic.gov.au/AboutCouncil/CouncilProfile/LocalLaws/Pages/EnvironmentEnforcement.aspx

The CoM *Waste Management Strategy Implementation Plan 2009-2012* also outlines a strategic focus to, “educate and motivate businesses to reduce waste, increase recycling and practice sustainable production and consumption”. One action the council undertakes to help achieve this is providing guidelines for preparing a waste management plan.

9.1.2 CITY OF SYDNEY WASTE MINIMISATION POLICY

The City of Sydney adopted its current *Policy for Waste Minimisation in New Developments* in October 2005. The purpose of the policy is “to encourage efficient waste minimisation and resource recovery for demolition, construction and on-going facility management,” and to facilitate efficient and safe waste and recycling collection from all premises.

The policy applies to all development within the City of Sydney local government area (LGA). It outlines a number of clauses that are applicable to all development types, as well as additional clauses applicable to either residential developments, commercial developments, or mixed developments.

One common requirement is submission of a Waste Management Plan (WMP) as part of the Development Application for any proposed development or alteration to land or building. A WMP must include:

- a site plan showing materials storage areas for reusable materials and recyclables during demolition and construction, and vehicle access to material storage areas
- estimations of quantities and types of materials to be reused, recycled or left over for removal from the site
- plans and drawings of the proposed development that highlight the location of and space allocated to the waste management facilities, including the nominated waste collection point and the path of access for both users and collection vehicles
- a single page summary for tenants and residents to inform them of waste management arrangements (where appropriate).

Another requirement for all developments is that “sufficient space” be provided to store, in separate containers, the volume of waste and recycling likely to be generated during the period between collections.

In order to help proponents assess how much space is sufficient, the City of Sydney provides indicative waste and recycling generation rates for various commercial development types. These generation rates are based on the *Combined Sydney Region of Councils - Draft Waste Management Guidelines*.

Hyder has been unable to locate a copy of the original source document, but we understand the generation rate data was developed in the 1980s. The figures are still widely used by NSW councils for calibrating waste generation rates for commercial buildings, and appear as an Appendix to the 2008 *Better Practice Guide for Waste Management in Multi-Unit Dwellings* published by the (then) Department of Environment and Climate Change NSW.

The commercial premises for which generation rates are provided are:

- Food premises
 - Butcher
 - Delicatessen
 - Fish shop
 - Greengrocer
 - Restaurants
 - Supermarkets
 - Takeaway.

- Retail (non-food sales)
 - Shops with less than 100m² floor area
 - Shops with over 100m²
 - Showrooms
 - Hairdresser.
- Other
 - Backpacker accommodation
 - Boarding house/guesthouse
 - Offices
 - Hotel
 - Licensed club
 - Motel (without public restaurant.

Waste generation rates are provided for each of the commercial premise types identified above, although indicative recycling generation rates are only available for 12 of the 17 categorisations.

Hyder understands the City of Sydney is currently seeking to develop more up-to-date waste and recycling generation rates for commercial buildings through its Better Buildings Partnership. The Partnership is a collaboration of a number of Sydney's leading public, private and institutional landlords, representing approximately 60% of the office floor space across Sydney's CBD. The Partnership aims to improve the sustainability performance of existing commercial and public sector buildings.

In terms of specific provisions for Commercial Developments in the City of Sydney's *Policy for Waste Minimisation in New Developments*, all businesses must have written evidence, held on site, of a valid and current contract with a licensed collector for waste and recycling collection and disposal. All businesses are, "encouraged to include in their waste contracts provisions that allow for the collection and recycling of high grade and low grade office paper, batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes, smoke detectors and other recyclable resources from the waste stream".

All commercial premises must also have a "dedicated and enclosed waste and recycling storage area which has adequate storage area to meet their generation rates" and sufficient space must also be allocated for the separate storage of recyclable electronic goods, and reusable items such as crates, pallets, and kegs.

9.2 POTENTIAL ADVANTAGES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following advantages are identified as being potentially associated with minimum standards for generators:

- directly impacts on waste generators, and can therefore help to drive behaviour change and uptake of opportunities to reduce waste generation at source (which is the most preferred outcome on the waste hierarchy)
- provides an opportunity to encourage building designers and developers to consider provision of adequate waste and recycling services at building design phase, and for this to flow through to better performance during operational stages
- can ensure appropriate provision of key infrastructure and sufficient space / access to allow for roll-out of services.

9.3 POTENTIAL ISSUES

Based on discussions with various stakeholders and an evaluation of examples such as are provided above, the following issues are identified as being potentially associated with minimum standards for generators:

- may be very difficult to monitor and enforce
- there may be a significant time lag before significant improvements are achieved through planning consents, given building renewal rates
- difficult to accommodate future changes in current requirements (for example, many current buildings were designed prior to regular provision of recycling services, and systems designed now may not suit future material stream collection requirements)
- standards and systems in different local government areas may be inconsistent, which could be frustrating for C&I generators who operate in multiple areas, or who move areas
- developers may take a 'tick the box' approach to meeting requirements, and engage an external consultant, which limits the opportunity for this to drive long-term awareness and behaviour change.

9.4 MAJOR BARRIERS TO IMPLEMENTATION

The major barriers to implementation associated with this option include:

- a general lack of appropriate baseline data on which to base decisions, such as calibrating tools that estimate how much floor space is required to provide appropriate recycling services for a specific type and size of a business
- councils (or other possible coordinating bodies) may not always have the sufficient resources / skills to develop and/or enforce standards.

9.5 CONCLUSION

A central attraction of approaches that involve applying minimum standards to C&I waste generators is that they provide an 'upstream' focus that can potentially achieve higher-order outcomes and promote long-term behaviour change, rather than being an 'end-of-pipe' solution.

The central issue with these approaches, however, is that improved performance (especially in terms of resource recovery rates) depends on the individual business actually being committed to using the available systems. Standards which dictate a building owner must provide sufficient space for separate paper and cardboard collections, for example, will have no impact if the building tenants (and their cleaning contractors) fail to adequately separate this material stream for recycling. General barriers associated with C&I source separation are outlined in Chapter 2.

Where there are existing standards for waste generators (such as requirements to develop Waste Management Plans at building planning approval stage), it would be useful for these standards to encourage better practices. In order for this to happen, it would be very useful if those who are developing the minimum standards had access to reliable and detailed information about C&I waste generation and composition patterns.

Hyder is aware that the Department is progressing a major C&I data assessment project concurrently with this current project, with a final report expected to be available by the end of 2013. This may provide sufficient baseline data to allow for better design of minimum standards for C&I waste generators.

10 ENHANCE THE UPTAKE OF NABERS WASTE

Description: Opportunities to enhance the uptake of NABERS Waste. The suite of NABERS Waste building environmental ratings, covering different types of buildings that generate C&I waste, could be better-used. Options including amended commercial leases or recognition schemes could accelerate the uptake of NABERS Waste use.

10.1 RELEVANT EXAMPLES

10.1.1 NATIONAL AUSTRALIAN BUILDING ENVIRONMENTAL RATING SYSTEM (NABERS)

The National Australian Building Environmental Rating System (NABERS) was originally developed by Australian governments to rate the environmental performance of buildings. NABERS offers rating tools for a number of building types, across several environmental impacts, including a Waste rating for offices. This rating measures two things: the amount of 'materials generated' by a building, and the percentage of that material diverted from landfill.

The rating is based on a simplified waste audit. Ten consecutive days are used to represent the behaviour of a building (and its occupants) throughout the year. The results are then measured against NABERS Waste benchmarks and the building is given a star rating that represents the level of performance. The following descriptions are provided for each rating:

- **5 stars:** Your office has excellent waste management practices! You have achieved the highest possible rating, and are leading the market in your management of the waste stream.
- **4 - 4.5 stars:** Your office has very good waste management performance, and has successfully implemented effective strategies to manage the waste stream.
- **3 - 3.5 stars:** Your office has above average waste management performance. Your office is addressing aspects of waste management, and reflects an awareness of the importance of reducing waste in the environment. Improvements are still possible.
- **2 - 2.5 stars:** Your office has average waste management performance. Your office is addressing some aspects of waste management. There is still scope for significant improvement, and positive changes will have a noticeable impact on your waste management performance.
- **1 - 1.5 stars:** Your office has poor waste management performance. This is a poor rating, and there are significant changes that can be implemented to improve your waste management practices.
- **0 stars:** Your office has very poor waste management practices and lies outside the rating scheme. It is very likely there are a range of simple initiatives that will significantly improve your waste management and bring your building within the rating scale.

Detailed guidelines are provided for NABERS accredited assessors²⁶ to follow in undertaking the required audits, assessing the information, and developing a rating. A NABERS Waste Accredited Performance Rating can be applied to three distinct and different situations:

²⁶ To become accredited, assessors must undergo NABERS training, pass an exam and two supervised ratings, and agree to abide by the NABERS Code of Practice: www.nabers.com.au/page.aspx?cid=649&site=2

- 1 **Tenancy:** Covers the mass of total waste generated in spaces within a building occupied by a single tenant and under the control of that tenant. This includes garbage, recycling, and other specialised recycling paths (for example toxics, fluorescent tubes, and secure recycling). A tenancy rating also considers the recycling efforts of tenants, by rating its recovery of recyclable materials.
- 8 **Base building:** Covers the recycling rate of all office spaces within a building and measures parameters that are under the control of the landlord or base building (ensuring that, for example, the recycling separated by tenants is being managed appropriately – i.e. recyclable materials are leaving the dock in appropriate processing streams).
- 9 **Whole building:** Essentially a combination of the above. Covers the mass of total waste generated by the building and all of its office tenants, and the recycling rate of the buildings waste and recycling infrastructure where the tenant is the owner and/or has control of all services, or the building manager is working in conjunction with all tenants.

10.2 POTENTIAL ADVANTAGES

The following advantages are identified as being potentially associated with efforts to enhance the uptake of NABERS Waste:

- by providing market recognition and potentially a competitive advantage for buildings with a high rating, NABERS can increase commercial acceptance of better practice systems
- the approach rates a building according to its actual performance, based on a simple waste audit
- the star rating system makes it very easy for users to understand their performance level.

10.3 POTENTIAL ISSUES

The following issues are identified as being potentially associated with efforts to enhance the uptake of NABERS Waste:

- as a voluntary system, NABERS requires the building owner, manager or tenant to actively seek out the system and undertake the rating
- outputs are based on a simple waste audit approach
- the most likely users are those which are already high performers, while those who could achieve higher gains may not be attracted to undertaking the voluntary assessment.

10.4 MAJOR BARRIERS TO IMPLEMENTATION

- It may be difficult to find robust evidence of the commercial advantages associated with having a building with a high NABERS (or Green Star) rating.

10.5 CONCLUSION

NABERS provides an opportunity for office building owners and tenants to undertake a simple assessment and benchmark waste performance in a way that is very easy to understand. This simplicity is a major advantage of the system, which could make it attractive for uptake by a large number of C&I waste generators, in the commercial office space.

As with any voluntary system, the key problem is that there is no compulsion for businesses to use the system. This is especially true for the poor performers, where the biggest improvements could be made.

11 CROSS CUTTING ISSUES WITH C&I WASTE

The scope of this project was very broad in terms of considering a wide range of potential place-based opportunities for improving C&I waste and recycling performance. Discussions during the Stakeholder Workshop ranged across an even broader range of topics, including options to improve C&I performance that are not specifically or necessarily place-based.

A number of ‘cross-cutting’ issues have emerged that are relevant to a number (or all) of the place-based approaches considered within this report. Some of these concepts have been considered in terms of their potential to support development of place-based solutions, with general discussion outlined below.

11.1 NATIONALLY CONSISTENT LICENSING

One issue discussed during the Stakeholder Workshop was the need for building owners and tenants to take greater responsibility for managing waste streams, with facility managers and cleaning contractors identified as a “missing link” in terms of improving C&I resource recovery performance. It was noted that building management and cleaning contracts are commonly awarded via tender, and the successful tenderer may win a package of work – including provision of building waste management services – at a set fee. This can create a commercial incentive to secure the cheapest waste collection services possible.

While cost effectiveness of waste and recycling services is a key consideration of any building manager, reference group stakeholders expressed concern that collection and disposal contracts for commercial buildings may be awarded to ‘rogue’ operators who are not well placed to maximise resource recovery, and which do not operate to a standard that the building owners might expect if they were dealing directly with the service providers and were directly exposed to reputational risks associated with the actions of the waste contractors.

A potential solution to this issue, which had broad support among the Stakeholder Reference Group, is to develop a waste collection and processing licensing system, and require (or at least strongly encourage) building owners within a particular precinct to stipulate that only licenced service providers be used. This licensing system could be used to set a minimum standard for service providers, and could help to ensure all operators are competing on a level footing.

Hyder considers there is significant merit in further investigating this concept. We believe it may be possible to address several issues through development of such a licencing system, especially given the major private sector service providers appear likely to strongly support development of a ‘level playing field’ and may therefore be willing to accept parallel reforms that could otherwise be less palatable. For example, data collection and reporting requirements could be considered as part of licensing conditions. While introduction of additional ‘red tape’ would not generally be supported by industry, stakeholders may be more willing to cooperate if they see commercial advantages in the wider reform package.

This balance of reform, simultaneously addressing key industry and government concerns (which are not necessarily the same), appears to have been achieved in South Australia. In discussing recent waste reforms in South Australia, reference group stakeholders from other states were especially envious of the regulatory settings where any operator providing waste collection, processing or disposal services must be licensed to operate in the State.

Workshop participants discussed the potential for developing a national waste licencing system. While it is beyond the scope of this current report to investigate the most effective manner to progress this particular concept, we do consider it likely that there would be a lot of common design elements that may be relevant for a licensing system servicing any jurisdiction.

11.2 COORDINATED INFRASTRUCTURE PLANNING

A high degree of interest in the South Australian landfill bans was noted during the Stakeholder Workshop, and also during the additional interviews and discussions Hyder had with various stakeholders as part of this project. The general model of banning mixed C&I waste from being directly disposed to landfill appears to have a degree of conceptual support across the wide Stakeholder Reference Group.

The concerns expressed by stakeholders in relation to landfill bans were generally related to the implementation and enforcement ability of various jurisdictions, rather than being associated with the general concept. Of particular concern is the ability to develop appropriate processing infrastructure, and sufficient market demand, so that there is a legitimate alternate pathway for materials diverted away from landfill.

A lack of coordination between various government departments was highlighted as a primary barrier to the development of appropriate resource recovery infrastructure, especially in NSW. It was suggested that, in some regions, it would be highly beneficial for the jurisdictional governments to 'ear mark' appropriate sites for infrastructure development (the approach of the Western Australian Government was highlighted as a potentially useful model to consider).

Hyder is aware of various attempts to identify future infrastructure needs. This includes national work undertaken to support development of the *National Waste Report 2010*, and high-level analysis provided in the *Inside Waste Industry Report 2011-12*. Work has also been undertaken within specific jurisdictions. For example, a detailed infrastructure gap analysis is currently being undertaken in NSW (although it is not currently publicly available), and Queensland recently attempted to map state-wide infrastructure needs for certain material streams (including organics, and paper and cardboard wastes).

Robust identification of future waste and resource recovery infrastructure needs could help provide the impetus for more coordinated planning of infrastructure development within a specific jurisdiction, or region. This process could help to overcome one of the major barriers associated with improving performance from the C&I waste stream. Involvement of the Australian Government in this process could help to raise the profile of the issue, and encourage greater collaboration between various government departments.

11.3 ASSESSMENT OF COMPETITION IMPACTS

The representatives of private waste contractors consulted during this project generally expressed a high degree of resistance to the concept of 'place-based licencing' systems. A number of potential issues were raised, including concerns about OH&S outcomes due to potential restrictions on contractor operating hours, and practical problems with implementation due to the complexity of service requirements across numerous C&I waste generators.

Recent experience at the Sunshine Coast Regional Council also highlights the potential for such place-based licensing approaches to generate significant competition and consumer protection concerns. While the final outcome of this specific legal action was not known at the time of writing, it is a reasonable assumption that most organisations (including local councils) would prefer to avoid being required to vigorously defend their efforts to improve C&I resource recovery within a court of law.

Hyder is of the view that many of the specific issues raised during the Stakeholder Workshop could be managed through appropriate design of place-based licensing systems. For example, if such an approach involved restricting the hours of operation for contractors, it would be highly recommended that the coordinating body consults closely with relevant contractors in order to ensure positive OH&S outcomes are achieved through these restrictions.

The most complex area of consideration is around competition impacts, and it would appear that a critical issue is the scale of the precinct being considered.

Hyder is also of the view that there would be situations where a strong 'public interest' argument could be made in support of place-based licensing. It is noted that the Gold Coast City Council has used place-based licensing initiatives to help address specific safety and amenity issues within two high-tourism precincts for more than a decade.

There are a number of potential and obvious attractions to such approaches, such as the ability to rationalise collections to reduce vehicle movements on local roads, and the ability to enforce minimum standards in terms of service offering and contractor performance. However, those organisations considering adoption of such approaches will need to temper these up front attractions against the understanding that efforts to progress such approaches may be met with strong contractor resistance and potential legal challenges.

During the Stakeholder Workshop, there was less resistance to suggestions of integrating place-based collection systems and contracts during the planning stages of new precinct development. Implementation of such systems does not impact on existing businesses, and may therefore be more practical to implement successfully.

Competition impacts will also need to be carefully considered in relation to other place-based approaches canvassed in this report, particularly direct investments in infrastructure. Hyder does not believe the *Competition and Consumer Act 2010* automatically precludes the advancement of any place-based approach to C&I wastes. However, we do recognise that place-based approaches have the potential to impact on existing businesses (indeed, the objective is to break away from business as usual), and these impacts should be identified and carefully considered by any proponent.

12 CONCLUSIONS AND RECOMMENDATIONS

Hyder found there is, overall, a lack of hard data to enable an assessment to be made of the effectiveness and cost of the various approaches being adopted to place-based C&I waste management. Many of the approaches reviewed have been implemented relatively recently, or are yet to be implemented, and it will take some time for their effectiveness to be assessed.

It is evident, however, that there are a range of potential advantages associated with each of the general place-based approaches considered within this report. Equally, there are a range of potential issues and barriers associated with each of those approaches. There is no 'clear winner' identified in terms of an approach that provides large benefits, low barriers, and could be implemented in a wide range of 'places' in order to improve waste and recycling outcomes for C&I generators. Place-based restrictions on direct landfill disposal, such as underway in South Australia, offer the best potential to achieve large reductions in tonnage of C&I waste to landfill, but depend on infrastructure availability and may require lengthy notice and transition periods.

On the basis of the research Hyder has conducted for this project, including discussions with a range of relevant stakeholders, our general conclusion is that place-based approaches which allow for the development of tailored approaches to influencing the C&I waste stream can be very useful for improving outcomes from this difficult-to-influence waste stream.

To summarise the key conclusions and recommendations contained within this report:

- There are a number of up front attractions to place-based licensing approaches, but organisations considering these approaches should seek legal advice and consult closely with contractors and the ACCC in order to fully understand competition impacts prior to implementation, as there is likely to be a high level of resistance from contractors.
- There is potentially a high degree of merit in encouraging development of infrastructure to meet a specific need within a precinct via direct investment, but proponents need a detailed understanding of the waste stream in order to develop technology suitable for processing that material, and be able to develop or access markets for the final outputs.
- Of the various options considered within this report, landfill bans are the only approach almost guaranteed to improve resource recovery levels, and there is a high level of interest in the South Australian approach of banning unsorted commercial wastes being disposed directly to landfill. However, implementation would involve major market reform in other Australian jurisdictions, and may increase total waste management system costs.
- Access to accurate, fine grained detail on C&I waste generation and management approaches would be of great help in progressing efforts to improve C&I performance, and it would be useful to explore options for developing an information exchange system that could help to capture C&I data from private operators.
- Development of waste matching initiatives that enable two (or more) businesses to achieve mutual benefit by using the waste stream from one process as an input to another could be considered the pinnacle achievement of place-based approaches to C&I waste, and high value should be placed on wider pursuit of such opportunities.
- Approaches that involve applying minimum standards to C&I waste generators provide an 'upstream' focus that can potentially achieve higher-order outcomes and promote long-term behaviour change, rather than being an 'end-of-pipe' solution. Access to reliable and detailed information about C&I waste generation and composition patterns could lead to improved design and enforcement of standards.
- NABERS provides an opportunity for office building owners and tenants to undertake a simple assessment and benchmark waste performance in a way that is very easy to

understand and could be attractive for uptake by a large number of C&I waste generators, although outcomes are limited by the lack of compulsion for business to use the system.

- Hyder recommends the Department and the Commercial & Industrial, Construction & Demolition Working Group further investigate the development of a nationally consistent licensing / accreditation system for waste service providers that could be implemented and enforced by each jurisdiction.
- Hyder recommends the Department considers undertaking (or supporting) a robust assessment of resource recovery infrastructure needs for major population centres within each jurisdiction, with a view to encouraging jurisdictional government to identify and protect appropriate locations for development of critical infrastructure.

General feedback from stakeholders suggested a high level of interest in the South Australian approach of banning unsorted commercial wastes being disposed directly to landfill, while stakeholders (especially representing waste contractors) suggested there would be very strong resistance to place-based licensing systems.

The business case for adopting any of the place-based approaches outlined in this report (and detailed system design associated with these approaches) would need to be considered on a case-by-case basis.

We hope this report will provide program and policy designers a solid basis for understanding the key issues and advantages associated with various place-based approaches to C&I wastes, and assist them in targeting future efforts.

APPENDIX A

INTERIM REPORT – *PLACE-BASED APPROACHES TO C&I WASTES* – AS PROVIDED TO THE STAKEHOLDER REFERENCE GROUP FOR DISCUSSION

PLACE-BASED APPROACHES TO C&I WASTES (INTERIM REPORT)

The Australian Government Department of Sustainability, Environment, Water, Population and Communities is responsible for the implementation of the *National Waste Policy: Less Waste, More Resources*. Strategy 10 of the policy addresses commercial and industrial (C&I) waste and recycling, and seeks to 'achieve major improvements in waste avoidance and re-use of materials'.

The implementation of this strategy is assisted by the Commercial & Industrial, Construction & Demolition Working Group, which comprises representatives from the state and territory governments.

As part of the implementation of Strategy 10, Hyder Consulting has been engaged by the Department to investigate potential options for progressing 'place-based approaches' that allow government policies and programs to be tailored to local patterns of C&I waste generation, service provision, recovery and landfill disposal behaviours.

Places, or precincts, may be of scales ranging from a single building or block, to a suburb, an area of a city, or a whole city. These approaches are distinguished by not applying at scales beyond a city (such as an entire State or Territory).

The *National Waste Report 2010*, using 2006-07 data, estimated the national recycling rate for C&I waste was 56%, with 6.5 million tonnes of C&I waste disposed to landfill. The objectives of place-based approaches to C&I waste and recycling will include:

- Avoiding and/or minimising the generation of C&I waste
- Increasing the amount of C&I waste being recovered
- Reducing the amount and proportion of C&I waste being sent to landfill
- Fostering high-value recovery, consistent with the principles of the waste hierarchy
- Being compatible with other public policy priorities and requirements, such as regarding climate change, competition, consumer protection and business viability.

While many attempts at taking local, tailored approaches to C&I waste have been made in Australia, no overview and analysis of these attempts exists. As a result, policy makers and program designers lack relevant data and information to inform their own decisions about the feasibility and likely effectiveness of place-based approaches to C&I.

Hyder has developed this Interim Report in order to provide a high-level overview of seven general types of place-based approaches that the Department has identified for investigation. The following Tables provide a brief description and examples of each approach, and an initial assessment of potential issues and advantages associated with that approach.

This Interim Report will form the basis for detailed discussion with stakeholders, including those which participate in a Reference Group Workshop in Sydney on April 17. The Workshop aims to harness existing knowledge across the broad variety of stakeholders impacted by C&I waste issues, and to identify practical options that will improve C&I waste and recycling outcomes.

The desired outcome of this project is that policy makers and program designers across the country will have improved access to relevant data and information to inform their own decisions about the feasibility and likely effectiveness of place- or precinct-based approaches to C&I.

For more information about the National Waste Policy, please visit www.environment.gov.au/wastepolicy

1: Precinct or place-based licensing	
SEWPaC description	Precinct or place-based licensing of collection service providers, attached to minimum service coverage requirements (eg as a condition of licence, all commercial premises in the licence area are to be provided with a commingled C&I collection bin and service). Allocation of areas to licensees could be based on auctioning, competitive tender or similar processes.
Examples	<ul style="list-style-type: none"> Gold Coast City Council (Queensland) has operated precinct based collections in two particular high-density tourism precincts for more than 10 years (Broadbeach and Surfers Paradise). The main reason is to lessen the amenity impact for tourists by minimising collection truck movements, and to have more control over the standard of service and timing of collections, etc. The waste is classed as C&I, but mostly comes from high rise hotels and apartment blocks. One contractor currently services both areas, awarded by open tender. It collects residual waste and commingled recyclables. Businesses are charged for the service through their rates (compulsory) but there is no additional charge for the commingled recyclables. The benefits are improved amenity for tourists and residents (reduced and better controlled collections), logistical efficiencies and improved access to recycling services Sunshine Coast Regional Council (Queensland) provides a compulsory C&I collection service, charged via rates, throughout the whole LGA. It provides bulk residual waste bins and commingled recyclables, plus cardboard collections as required. Benefits include collection efficiencies, improved amenity in tourist areas, improved segregation and recovery opportunities, and potential to control sufficient feedstock to justify development of advanced waste treatment options. However, the arrangement is currently under investigation by the Queensland Competition Authority (ruling expected May-June) due to contractor complaints that the arrangement is anti-competitive City of Melbourne requires contractors within the 'central city' to apply for a permit, which imposes certain conditions, including data collection requirements, collections times, and minimum service provisions in terms of maintenance and presentation of bins.
Potential advantages	<ul style="list-style-type: none"> More efficient collection runs, with reduction in truck movements and associated impacts (noise, congestion, emissions) and more control over collection times etc in the precinct Can set minimum service standards (e.g. provision of co-mingling recycling) Easier to monitor and manage if there is a single port of call with one contractor The opportunity to choose the disposal / processing pathway for collected materials.
Potential issues	<ul style="list-style-type: none"> Difficulties identifying an appropriate body to coordinate such arrangements – for example councils, or a local business chamber? Different businesses may have different service requirements, unlike the municipal sector where there is general uniformity in terms of bin sizes and collection frequency etc Resistance from collection service providers if profit margins associated with a joint arrangement are lower than the profit margins on individual arrangements May lead to a 'lowest common denominator' outcome that stifles potential innovation in terms of increased resource recovery by some individual businesses Increased bureaucracy will lead to frustration if no clear benefits are evident.
Barriers to implementation	<ul style="list-style-type: none"> This option raises significant competition and consumer protection issues, and it may be necessary to navigate the ACCC's public interest exemption process Additional barriers relating to coordinating body – for example, corruption concerns with local councils (ICAC report, November 2002)

2: Place-based direct investment (or co-investment)	
SEWPaC description	Place-based direct investment (or co-investment) for specific infrastructure and/or service provision (for example, local digesters for restaurant and cafe precincts, commingled recyclables bins for small clusters of high-street shops, C&I material recycling facilities (MRFs) for cities, etc).
Examples	<ul style="list-style-type: none"> City of Melbourne's Designated Waste Collection Area project, which involves provision of a bio-digester for food waste, glass crusher machine and a baler for plastics and paper/cardboard. Stored in a single location in Ross House Association in Flinders Lane for the 12-month Degrares Street/Centre Place Integrated Waste Management Program Trial. It is estimated the total waste generated in the precinct is approximately 300tpa and, based on discussions with café and restaurant owners, Council believes 70% of this waste stream is comprised of recyclable material. There are currently 40 bins stored permanently in the area, but up to 30 of these will be redundant due to the new program. The cost of equipment is estimated at approximately \$80,000, with site rental approximately \$25,000 pa. Two part time staff will operate the equipment, at an estimated minimum cost of \$150,000 p.a. At this stage the cost of utilities and transport of the recyclables away from the site, and performance outcomes, are unknown. Hazelmere Timber recycling (Western Australia). The Eastern Metropolitan Regional Council (EMRC) identified a large grouping of cabinet makers in the LGA, which all had similar issues with wood waste. An initial study was undertaken to quantify the scale and composition of the waste stream, and this identified sufficient volume to warrant further consideration of options. A follow-on study then looked at potential markets for recovered wood waste, and identified sufficient potential demand. On this basis, the EMRC invested in development of a basic processing facility that was sufficient to demonstrate the concept. There was then an interim expansion, part funded by the Waste Authority, and then as processing demand ramped up the EMRC (which owns and operates the facility) invested in a >\$1million upgrade during 2011. The EMRC has followed a similar model with direct investment in mattress recycling.
Potential advantages	<ul style="list-style-type: none"> Ability to target isolated precinct / specific grouping of C&I waste generators with provision of directly relevant infrastructure Clear mechanism to monitor uptake and performance can be established, assuming sufficient stakeholder consultation and support prior to infrastructure provision Potential for very high resource recovery rates in some instances, helping develop showcase examples that can be used in driving further investment Ability to address specific issues within a precinct (for example, the Degrares Centre project will reduce the number of bins on the street by 75% and reduce truck movements within local laneways).
Potential issues	<ul style="list-style-type: none"> Finding a suitable location close to the precinct to store the required infrastructure / equipment, and having sufficiently skilled operators for equipment Requirement for someone to fund capital costs of infrastructure, as well as the on-going operation of equipment Requires commitment by businesses within the precinct to support and appropriately use the specific infrastructure, and requires a champion for the cause.
Barriers to implementation	<ul style="list-style-type: none"> Detailed stakeholder consultation required to determine demand and potential uptake. Will also require a high degree of good-will among potential users, and exposes funding organisation to technology / commercial risk which they may not be willing to bear.

3: Place-based restrictions on direct landfill disposal

SEWPaC description	Place-based restrictions on direct landfill disposal. This could include landfill restrictions or bans on mixed C&I waste being disposed of to landfill from a collection service area/catchment unless it has been subject to an appropriate process of sorting, recovery or treatment (such as the South Australian approach).
Examples	<ul style="list-style-type: none"> The South Australian <i>Environment Protection (Waste to Resources) Policy 2010</i> (W2R EPP) provides regulatory underpinning for South Australia's Waste Strategy. A key feature of the W2R EPP is the introduction of provisions prohibiting the disposal of certain waste types to landfill. The first landfill bans came into effect in September 2010, covering materials including lead acid batteries, whole tyres, and hazardous waste. The W2R EPP does not enforce segregation of commercial waste, although this is "something that is encouraged" and, after 1 September 2012, all metropolitan Adelaide waste will be banned from landfill unless it is first subjected to resource recovery "in accordance with the waste management hierarchy and to the extent reasonably achievable". It is at the discretion of the business waste generator if it separates waste before it is collected for disposal, however the government advises "the cost of resource recovery will likely increase waste disposal costs therefore it may be more cost efficient if the business separates the waste themselves before it is collected for disposal". The W2R EPP was authorised by the State's Governor in February 2010 (although discussed for several years prior) and landfill bans apply progressively from September 2010 to September 2013, with the staged approach designed to provide time for the development of markets and infrastructure to support the bans The Victorian <i>Environment Protection (Industrial Waste Resource) Regulations 2009</i>, Clause 11, issues classifications that ban certain waste streams from landfill. These are issued when alternative reuse or recycling options are identified, and cover materials including large containers and used oil filters.
Potential advantages	<ul style="list-style-type: none"> Smaller regulatory footprint, in that it does not require direct engagement with all C&I generators or necessarily any amendments to their existing practices Provides increased certainty of feedstock for businesses that are seeking to invest in processing and resource recovery systems for C&I waste European experience suggests significant increases in resource recovery rates are possible (for example, German bans on 'untreated' waste to landfill increased diversion rates from 73% to 99% over the space of 6 years).
Potential issues	<ul style="list-style-type: none"> There is no point banning items from landfill unless there is a clear alternate pathway for that material; without sufficient resource recovery options, the material may only be stockpiled (this issue has occurred in some areas following banning of tyres to landfill) Requires sufficient lead time for development of required alternate pathways, and therefore has a significant lag time prior to achieving tangible outcomes Burden of resource recovery is on processors / landfill operators, and may not encourage behaviour change within individual businesses Difficult to enforce and will require significant resources to monitor each load of waste delivered to a disposal site.
Barriers to implementation	<ul style="list-style-type: none"> Requires timely development of alternate processing pathways for materials, and therefore may involve significant lag time prior to outcomes being achieved.

4: Waste catchment analysis	
SEWPaC description	Waste catchment analysis. Options to consider under this category may include trying to develop fine-grained, spatially-accurate understanding of waste generation and landfill diversion opportunities. For example, this could involve consideration of using RFID tagging of bins, truck-based GPS and lift-weight recording to compile real-time and spatially-accurate data on actual flows of C&I waste and recycling, based on defined precincts or service areas.
Examples	<ul style="list-style-type: none"> City of Melbourne requires all companies collecting waste from the 'central city' precinct to apply for a specific permit, or risk a \$2,000 fine for each offence. The permit imposes certain conditions on contractors, including a requirement to provide information about the size and type of bins collected, and the overall volume of waste the contractor collects each week. Contractors must also keep an up to date bin database to allow bin ownership to be tracked, with each bin required to have a unique identifiable number (although City of Melbourne does not require the contractor to provide it access to this information) Zero Waste SA is undertaking a Regional Organic Waste Mapping project. Stage 1 is a pilot study to gain better understanding of the type, amount, location of current and future potential organic waste in defined areas, as well as identifying current commercial reprocessing arrangements as well as factors influencing regional recycling economic feasibility.
Potential advantages	<ul style="list-style-type: none"> Access to reliable data supports evidence-based policy and program development Allows for development of targeted infrastructure and programs responding to specific needs in the area Potentially allow for optimisation of collection runs for contractors, enabling for example a more efficient recycling service if contractors know requirements of the various business groupings.
Potential issues	<ul style="list-style-type: none"> Potential resistance to anyone gathering this level of data, due to commercial sensitivities of the waste generators (RFID programs in the municipal sector have in some case lead to "big brother" accusations and a high level of resistance from waste generators) Practical difficulties in categorising waste materials and even weighing individual bins in the course of normal collection activities Could result in a huge volume of data being collected, and it would be a challenging task to fully interrogate the available information
Barriers to implementation	<ul style="list-style-type: none"> It would be useful to establish a consistent approach to data categorisation and record methodology prior to uptake of such options. There is currently no nationally consistent approach to gathering and assessing this data Uptake and usefulness of such initiatives would depend on willingness of waste generators and private contractors to provide / gather / share the information, and there is likely to be resistance to any programs that introduce 'green tape'.

5: Waste matching initiatives

SEWPaC description	Waste matching initiatives. These options could include matching waste generators with collection service providers or users of wastes as resources.
Examples	<ul style="list-style-type: none"> • Kwinana Industrial Estate (WA) contains various heavy industry processes and businesses, including an oil refinery, chemical manufacturers, a power station and a waste water treatment facility. The various industries exchange resources, with examples of industrial synergies including: a chemical plant supplying food grade carbon dioxide to a utility gas provider; a chemical plant supplying gypsum for residue area amelioration at the alumina refinery; and the oil refinery providing hydrogen for a city bus trial and a neighbouring company • Victorian Waste Management Association has a waste exchange database that links recycling companies with recycle materials. This exchange claims to provide assistance, guidance, training and advice on many different forms of waste, with the aim of “enabling businesses to meet the objectives of sustainable waste management set by government”. Users can enter details of the waste stream they have, or the waste materials they have demand for, and the exchange serves to link the generator with potential user • Planet Ark maintains the a Business Recycling Website and hotline that are designed to help business waste generators find appropriate management and recovery options for their specific waste streams. The rationale for developing the services is that it can be difficult for a small business to find the reuse, recycling and waste services they need. Many don't have the time or the experience in finding these types of services.
Potential advantages	<ul style="list-style-type: none"> • Can unlock significant savings opportunities where one party reduces costs associated with disposing a 'waste' material and another party reduces costs associated with raw material inputs • Encourages re-use of materials, which is a high priority on the waste management hierarchy • Could link in well with other place-based approaches (e.g. waste catchment analysis) as part of the suite of options to improve C&I outcomes.
Potential issues	<ul style="list-style-type: none"> • Limited examples of one company's waste being in high demand by another company (other than a waste collection / disposal company!) • Where there is a match between material wastes and needs, there may be issues with physically and economically transporting materials between the sites.
Barriers to implementation	<ul style="list-style-type: none"> • While there is potential to custom-design industrial parks such that the various companies can benefit from 'industrial ecology' opportunities, it may be difficult to retrofit these concepts to existing business precincts • Difficult to progress such approaches on anything other than an ad hoc opportunistic basis.

6: Minimum recovery/recycling standards for generators of C&I waste	
SEWPaC description	Minimum recovery/recycling standards for generators of C&I waste. Options for using existing regulation (such as licenses, planning approvals) or non-regulatory measures on generating businesses to require them to provide facilities for recycling, within certain precincts or service areas, could be considered here. These standards could be based on a principle of equivalence with kerbside collection service requirements offered to households in the same general service area.
Examples	<ul style="list-style-type: none"> City of Melbourne's Environmental Local Law includes an Environmental Management Plan which "sets Objectives, Performance Requirements and Prescribed Requirements for activities that may affect the environment of the neighbourhood in which the activities are conducted". Clause 3.3 of the EMP states "all necessary steps must be taken to ensure all recyclable material and green waste is separated from other waste material" (a Category 3 offence), although this clause is not strictly enforced. The City of Melbourne also provides guidelines for Preparing a Waste Management Plan and outlines requirements for businesses to provide facilities for recycling. It is also seeking to develop a simple easy- to-use guideline for waste management plans for new commercial and mixed commercial/residential developments The Western Australia Government has developed a Common Use Agreement (CUA) for the purchasing of goods and services it is mandatory for all Western Australian Public Authorities in the Perth region to use the General Waste Disposal and Recycling Services contract. This CUA "aims to maximise conservation of resources by avoiding and minimising waste going to landfill. All organisations are strongly encouraged to reuse, recycle, and recover before disposal".
Potential advantages	<ul style="list-style-type: none"> Opportunity to encourage developers to consider provision of adequate waste and recycling services at building design phase, and for this to flow through to better performance during operational stages Can ensure appropriate provision of key infrastructure and sufficient space / access to allow for roll-out of services.
Potential issues	<ul style="list-style-type: none"> May be very difficult to monitor and enforce There may be a significant time lag before significant improvements are achieved, given building renewal rates Hard to accommodate future changes in requirements (for example, many current buildings were designed prior to regular provision of recycling services, and systems designed now may not suit future requirements) Systems in different local government areas may be inconsistent Developers may take a 'tick the box' approach to meeting requirements, and engage an external consultant, which limits the opportunity for this to drive long-term awareness and behaviour change.
Barriers to implementation	<ul style="list-style-type: none"> There is a general lack of appropriate baseline data on which to base decisions, such as how much floor space is required to provide appropriate recycling services for a specific type and size of a business Councils may not always have the sufficient resources / skills to develop and enforce standards.

7: Opportunities to enhance the uptake of NABERS Waste

SEWPaC description	Opportunities to enhance the uptake of NABERS Waste. The suite of NABERS Waste building environmental ratings, covering different types of buildings that generate C&I waste, could be better-used. Options including amended commercial leases or recognition schemes could accelerate the uptake of NABERS Waste use.
Examples	<ul style="list-style-type: none"> The National Australian Building Environmental Rating System (NABERS) was originally developed by the NSW Government to rate the environmental performance of buildings. NABERS offers rating tools for a number of building types, across several environmental impacts, including a Waste rating for offices. This rating measures two things: the amount of ‘materials generated’ (garbage, recyclables, re-use, etc) by a building, and how much of that is diverted from landfill/disposal (percentage of total materials generated). The rating is based on a simplified waste audit. Ten consecutive days are used to represent the behaviour of a building (and its occupants) throughout the year. The results are then measured against NABERS Waste benchmarks and the building is given a star rating that represents the level of performance.
Potential advantages	<ul style="list-style-type: none"> By providing market recognition and potentially a competitive advantage for buildings with low waste generation and high recycling rates, NABERS can help to increase commercial acceptance of better practice waste systems Rates a building according to its actual performance, based on a simple waste audit, and can be used for the base building (central services), whole building, or individual tenancies.
Potential issues	<ul style="list-style-type: none"> Voluntary system, requiring the building owner, manager or tenant to actively seek out the system and undertake the rating Based on a simple waste audit “Preaching to the Choir” effect of the likely users being those which are already high performers, while those who could achieve higher gains may not be attracted to undertaking the voluntary assessment.
Barriers to implementation	<ul style="list-style-type: none"> It may be difficult to find robust evidence of the commercial advantages associated with having a building with a high NABERS (or Green Star) rating.

APPENDIX B

STAKEHOLDER WORKSHOP NOTES – SYDNEY, 17 APRIL, 2012

MINUTES

Workshop	Place Based Approached to C&I Wastes																																																												
Date	17 April 2012	Reference	AA004890																																																										
Venue	Marconi Room, Town Hall House, Sydney																																																												
Attendees	<table><tr><td>Adam Johnson</td><td>Western Metropolitan Regional Council (Perth)</td></tr><tr><td>Bert van den Broek</td><td>Hyder</td></tr><tr><td>Brett Giddings</td><td>Australian Packaging Covenant</td></tr><tr><td>Chris Derksema</td><td>City of Sydney</td></tr><tr><td>Christine Hodgkiss</td><td>Veolia Environmental Services</td></tr><tr><td>Claire Nagengast</td><td>Hyder</td></tr><tr><td>Colin Sweet</td><td>Thiess Services</td></tr><tr><td>Dean Naudi</td><td>Transpacific Cleanaway</td></tr><tr><td>Emma Mountjoy</td><td>Hyder</td></tr><tr><td>Garth Lamb</td><td>Hyder</td></tr><tr><td>Gavin Riddell</td><td>SITA Australia</td></tr><tr><td>Geoff Burton</td><td>City of Sydney</td></tr><tr><td>Janet Sparrow</td><td>Planet Ark</td></tr><tr><td>Jenny Pickles</td><td>Australian Food & Grocery Association</td></tr><tr><td>John Blumson</td><td>Zero Waste South Australia</td></tr><tr><td>Josh Evans</td><td>Gold Coast City Council</td></tr><tr><td>Lauren Anderson</td><td>City of Sydney</td></tr><tr><td>Mark Jackson</td><td>NSW EPA</td></tr><tr><td>Mark McKenzie</td><td>City of Sydney</td></tr><tr><td>Mick Nicholson</td><td>JJ Richards</td></tr><tr><td>Paul Starr</td><td>Australian Government (DSEWPac)</td></tr><tr><td>Phil Richards</td><td>JJ Richards</td></tr><tr><td>Rebecca Brown</td><td>Western Australia Local Government Association</td></tr><tr><td>Richard Chadwick</td><td>Australian Competition and Consumer Commission</td></tr><tr><td>Rick Ralph</td><td>Waste Contractors and Recyclers Association (Queensland)</td></tr><tr><td>Ron Wainberg</td><td>Hyder</td></tr><tr><td>Sam Gill</td><td>City of Sydney</td></tr><tr><td>Stuart Gold</td><td>Australian Packaging Covenant</td></tr><tr><td>Tony Khoury</td><td>Waste Contractors and Recyclers Association (NSW)</td></tr></table>			Adam Johnson	Western Metropolitan Regional Council (Perth)	Bert van den Broek	Hyder	Brett Giddings	Australian Packaging Covenant	Chris Derksema	City of Sydney	Christine Hodgkiss	Veolia Environmental Services	Claire Nagengast	Hyder	Colin Sweet	Thiess Services	Dean Naudi	Transpacific Cleanaway	Emma Mountjoy	Hyder	Garth Lamb	Hyder	Gavin Riddell	SITA Australia	Geoff Burton	City of Sydney	Janet Sparrow	Planet Ark	Jenny Pickles	Australian Food & Grocery Association	John Blumson	Zero Waste South Australia	Josh Evans	Gold Coast City Council	Lauren Anderson	City of Sydney	Mark Jackson	NSW EPA	Mark McKenzie	City of Sydney	Mick Nicholson	JJ Richards	Paul Starr	Australian Government (DSEWPac)	Phil Richards	JJ Richards	Rebecca Brown	Western Australia Local Government Association	Richard Chadwick	Australian Competition and Consumer Commission	Rick Ralph	Waste Contractors and Recyclers Association (Queensland)	Ron Wainberg	Hyder	Sam Gill	City of Sydney	Stuart Gold	Australian Packaging Covenant	Tony Khoury	Waste Contractors and Recyclers Association (NSW)
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Josh Evans	Gold Coast City Council																																																												
Lauren Anderson	City of Sydney																																																												
Mark Jackson	NSW EPA																																																												
Mark McKenzie	City of Sydney																																																												
Mick Nicholson	JJ Richards																																																												
Paul Starr	Australian Government (DSEWPac)																																																												
Phil Richards	JJ Richards																																																												
Rebecca Brown	Western Australia Local Government Association																																																												
Richard Chadwick	Australian Competition and Consumer Commission																																																												
Rick Ralph	Waste Contractors and Recyclers Association (Queensland)																																																												
Ron Wainberg	Hyder																																																												
Sam Gill	City of Sydney																																																												
Stuart Gold	Australian Packaging Covenant																																																												
Tony Khoury	Waste Contractors and Recyclers Association (NSW)																																																												

Presentation 1: Introduction

- Garth Lamb introduced the project and outlined the aim of the Workshop, emphasising the goal was to have an open but civil debate, with all participants given an opportunity to discuss their views on the pros and cons of various place-based approaches to C&I waste. He asked participants to refer to Hyder's Interim Report as the basis of discussion, and gave an overview of the agenda (as per below).

Time	Agenda item	Presenter
0945–1000	Pre-workshop tea and coffee	
1000–1005	Introduction / rules of engagement	Garth Lamb (Hyder)
1005–1015	Project overview and role in National Waste Policy implementation	Paul Starr (DSEWPaC)
1015–1025	Overview of C&I issues within the City of Sydney	Mark McKenzie (City of Sydney)
1025–1035	What is and isn't possible – waste control in a competitive market	Richard Chadwick (ACCC)
1035–1040	Overview of Gold Coast City Council place-based approach	Josh Evans (GCCC)
1040–1110	'Option 1' place-based licensing	Facilitated Discussion
1110–1115	Overview of Hazelmere Timber Recycling direct investment	Adam Johnson (WMRC)
1115–1145	'Option 2' direct investment	Facilitated Discussion
1145–1150	Overview of South Australia landfill disposal bans	John Blumson (ZWSA)
1150–1220	'Option 3' Place-based restrictions on direct landfill disposal	Facilitated Discussion
1220–1240	Other place-based opportunities (including Options 4-7)	Facilitated Discussion
1240–1300	Working lunch and summary of key workshop outcomes	

- **Presentation 2: Project Overview and Role in National Waste Policy implementation**
- Paul Starr outlined the background to the project, and the role of the Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) in the implementation of the National Waste Policy. He indicated the place-based systems project is one of three C&I Waste related projects currently being undertaken by the Department.
- Paul further emphasised the Workshop was intended to be an open, frank discussion of place-based approaches, with the final report intended to inform decision making on C&I waste management by the various Australian jurisdictions. He also explained the Department does not have any "preferred option" and there is a genuine opportunity for stakeholders to provide input and identify which (if any) of the various systems may be effective at delivering improved C&I waste and recycling outcomes.

Presentation 3: Overview of C&I Issues within the City of Sydney

- Mark McKenzie provided a 'big picture' outline of issues currently facing the City of Sydney, and indicated that influencing better C&I waste outcomes is a high priority, especially given wider plans to increase activity within the City. The focus on growing the night time economy in particular presents challenges to current approaches of collecting and managing commercial wastes.

- Mark summarised key factors of the City's overarching *Sustainable Sydney 2030* vision, and noted that improved performance on C&I waste forms a key pillar in plans to meet the City's overall 70% greenhouse emission reductions targets. He provided a brief overview of various master plans in development, relating to green infrastructure, renewable energy, recycled water, advanced waste treatment and particularly advanced waste collection systems (e.g. vacuum collection systems). How these can be most efficiently implemented is a major consideration, and the opportunity to develop place-based approaches is part of the discussion.
- Mark noted the City of Sydney's *Interim Waste Strategy* includes a strong focus on C&I wastes, and raises a number of reasons that place-based approaches may help improve performance outcomes. He suggested it is not possible to keep increasing the number of trucks in the City, that increases in source separation is likely to increase vehicle movements, and that new approaches need to be developed based on what delivers the best outcomes, rather than what causes least disruption to business as usual practices.
- Mark indicated critical issues regarding C&I waste management include a lack of relevant and accurate data, a lack of knowledge around transport needs, and issues with governance in terms of clear guidance on how the City can facilitate improved C&I waste management outcomes.

Presentation 4: What is and isn't possible – waste control in a competitive market

- Richard Chadwick, General Manager – Adjudication Branch outlined the role of the Australian Competition and Consumer Commission (ACCC) and the relevance of the *Competition and Consumer Act 2010* in terms of place-based approaches to C&I waste. He outlined a series of prohibitions designed to avoid activities which would substantially lessen competition in the market, for instance provisions that prevent competitors from fixing prices. Importantly, he noted that regardless of the ACCC's position, third parties (such as other market participants) can also take action under the Act.
- Richard outlined the potential for exemptions under the Act in cases that pass the "public interest test". The ACCC acknowledges that the competitive market does not always present the best solution or outcome and when a situation or arrangement is at risk of breaching the Act, it is possible to apply for an exemption under the public interest provision.
- An example provided was the national Drum Muster product stewardship program for collecting chemical containers. The program is funded through a (small) levy applied by all chemical manufacturers on the sale of relevant containers. While application of this levy is a form of price fixing and therefore risked breaching the Act, the ACCC deemed it was in the public interest for the program to proceed.
- Richard provided a brief outline of the "public interest test" process, which includes a consultation period and generally takes 5-6 months. He emphasised that, if market participants believe a scheme or activity is possibly at risk of breaching the Act, independent legal advice should be sought.
- A member of the group asked how the Act applies to different levels of government. Richard indicated the Act can apply to any entity undertaking a business activity. He acknowledged that it is up to judicial interpretation of what counts as trade and commerce.
- Jenny Pickles asked about the assessment of whether an activity was in the "public interest", citing the possible example of City of Sydney and the use of underground collection systems. Jenny asked whether the onus of proof would lie with the City of Sydney, and Richard confirmed that the onus is on the proponent. Richard also acknowledged "public interest" is a broad concept, and while a premium is placed on arrangements which promote efficiency, other aspects could be considered by the ACCC.

Presentation 5: Overview of Gold Coast City Council Place-Based Approach

- Josh Evans provided an overview of the precinct based collections that the Gold Coast City Council (GCCC) has operated in two particular high-density tourism precincts for more than 10 years (at Broadbeach and Surfers Paradise).
- Josh provided an outline of the amalgamations that had taken place in the region and the development of the place-based approaches, and indicated the central reason they have been put in place is to address public safety and amenity concerns in these particular high-tourism areas.
- Josh noted the waste composition figures included in Hyder's Interim Report (100% C&I) was not correct, and the breakdown of waste collected in these two areas is approximately 35% C&I and 65% MSW, although the two streams are commonly mixed in a single bin. He also clarified that C&I customers are charged an additional fee for recycling services.

Facilitated Discussion: 'Option 1' Place-Based Licensing

- Dean Naudi asked whether truck movements had really been reduced in the GCCC areas, given that separate collections of cardboard recycling were still offered. Josh advised that vehicle movements were still significantly reduced in the areas.
- Rick Ralph indicated place-based approaches might present an unsafe work environment, and that safety should be a priority. Rick suggested that limiting the hours of collection presented a safety issue, and also emphasised that all businesses present different waste collection needs in terms of materials, containers and frequencies.
- Garth Lamb questioned whether the safety concern around timing of collections related directly to place-based approaches. Tony Khoury confirmed council conditions on collection times are an on-going issue for WCRA NSW members, in areas without any place-based approaches. Rick Ralph stated that controls on the timing of collection would likely be imposed in any place-based approach to C&I waste, and re-stated OH&S concerns. John Blumson suggested this could be considered in a positive context, with the opportunity for OH&S concerns to be addressed in design of place-based approaches to C&I waste management.
- The group discussed OH&S and generally agreed this is of critical importance, and any approach to waste collection and management should include strong consideration of OH&S outcomes.
- Mark McKenzie suggested 'precinct' was termed loosely, and reminded the group that place-based approaches could apply to a single building or to an entire suburb. He also noted that it should not be implied that contractors were inefficient, in terms of ability to service an individual business, but suggested that a bigger picture point of view was necessary, and that individual contracts and competition did not work in a modern city – in particular that there is a limit to the amount of vehicles that can fit efficiently within a high density area. Mark suggested it is time to look at other systems.
- Garth Lamb stated that place-based approaches were not only being considered in order to address efficiencies (such as reducing the number of collection trucks on the road) but also performance in terms of improved resource recovery.
- Colin Sweet asked a question of Richard Chadwick, explaining a situation in which Thiess had been advised by the ACCC to seek legal advice, and that "the most expensive legal advice in Australia" was that the company should go back and speak to the ACCC. Richard Chadwick emphasised that employees of the ACCC were not able to give legal advice, and ultimately courts would decide if an activity breaches the Act. Colin asked about the ACCC structure, and Richard Chadwick provided some clarification of the various ACCC sub-sections and activities.

- Dean Naudi indicated that within any precinct there would be multiple waste management issues (including liquid and special wastes, as well as mixed waste and recyclables), and that multiple systems were required to deal with those various waste streams. He suggested source separated systems are increasingly being encouraged and this would require multiple collections. He also noted that restricting the number of vehicles entering an area was not possible with so many differing waste management issues and waste streams. Dean highlighted building owners and managers as having an important role in the efficient use of source separation systems. He also suggested precinct based approaches were anti-competitive and would drive out smaller operators as they would not be able to compete in such a market.
- Rick Ralph indicated that waste related data is flawed, and particularly that the size of the industry in Queensland has been underestimated. Rick suggested that a balance was needed to ensure that business was not impacted in any way, and stated his organisation would take any proponent of place-based systems “to the highest court” if those systems impacted on existing businesses.
- Jenny Pickles asked why industry had not been challenged to come up with a solution, and why this was generally left to local government. Jenny also noted that current data suggests C&I waste is not currently managed in the most efficient way.
- Rick Ralph asked why waste service customers and building owners were not in the room.
- Christine Hodgkiss agreed that engaging the customer was important, and that cleaning contractors in particular are a “missing link” in terms of engagement. Christine acknowledged that while individual companies may operate their collection activities efficiently, further efficiencies could be gained by approaching collections on a precinct basis. However, she raised planning issues as a concern and highlighted the importance of ensuring appropriate infrastructure is in place.
- Ron Wainberg reminded the group that the workshop discussion was intended to identify issues, including potential advantages and disadvantages, and to discuss how issues (such as OH&S concerns) could be addressed. He also stressed place-based systems would not be brought in quickly, and the focus should be on identifying key issues that need to be addressed in future planning.
- John Blumson raised the issue of accreditation for the cleaning / waste industry. Dean Naudi agreed that accreditation was important and suggested that all waste contractors should be licensed, and all building owners should be required to engage only licensed contractors. He suggested that building owners should be more accountable. The permit system undertaken by City of Melbourne was raised; the group wondered how well this system worked, but thought it could be worthy of consideration.
- Rick Ralph stressed the importance of a level playing field in the industry and suggested again that place-based licensing would threaten private business. He stated that the concerns he had outlined were, in his view, “show stoppers”.

Presentation 6: Overview of Hazelmere Timber Recycling Direct Investment

- Adam Johnson presented the case study of Hazelmere Timber recycling in Western Australia. Adam previously worked for the Eastern Metropolitan Regional Council (EMRC) which developed the Hazelmere Recycling Facility.
- Adam indicated that the EMRC identified significant quantities of wood waste were being produced in the northern suburbs of Perth. This was due to a large grouping of cabinet makers, and also due to the large quantities of pallets remaining after shipments of supplies to mining activities etc. A rudimentary pilot processing facility was established, and generators were offered a cheaper bin for source separated wood collections (compared to mixed waste). Adam emphasised the importance of finding solutions within the marketplace and indicated that the timber recycling scheme’s success has led to such programs being expanded.

Facilitated Discussion: 'Option 2' Direct Investment

- Garth Lamb asked how important data has been to the establishment of the scheme. Adam acknowledged that data had been critical to its success, outlining that the market needs to be thoroughly assessed, and the importance of researching potential products and whether a market exists for that product. Adam explained that a pilot trial had also been undertaken.
- Stuart Gold discussed the Australian Packaging Covenant's experience of making direct investment to resource recovery infrastructure. He said a recent review of 85 APC projects (and over \$80 million in funding) showed the least successful projects were those which lacked a market for the targeted commodity/ material, and were frequently associated with the C&I waste stream. He indicated that commodity price crashes (including following the 2008 Global Financial Crisis) resulted in a lesser driving force for the recovery of materials. The group agreed ensuring that an established market exists was important.
- Tony Khoury questioned the Federal Government's role in considering place-based approaches. He suggested there is a lack of consistency in regulations, as each State & Territory had differing set of waste management laws and regulations, including differing waste definitions and approaches to waste levies. Further, he pointed out that in NSW 152 different Local Councils continue to make their own decisions at a local, micro level. He said that the only current Federal Legislation that will impact consistently across Australia is the Carbon Tax, and expressed the view that with the current differing State laws and many, many local government influences and planning approvals, it was very difficult to imagine that the Workshop discussion will be any more than just a good discussion.
- Paul Starr clarified that the project was intended to be a collaborative effort and that the C&I Working Group (made up of representatives from the various jurisdictions) had been unanimous that place-based approaches were a priority issue in multiple jurisdictions.
- Colin Sweet noted that, in relation to waste, there was generally no overarching national strategy, that the legislation within the various jurisdictions is "interesting", and that regulations are often not enforced. He suggested that the only hope of uniformity is to "tackle this from the top" but he expressed doubt that there was sufficient political will to drive through any significant reforms.
- The group discussed whether the issue was national and whether situations differed across jurisdictions. The group further discussed whether C&I waste was a priority issue. Mark Jackson indicated that direct investment options had been raised by the former NSW Environment Minister Frank Sartor, and had received positive feedback from industry. He said he was keen to hear how government could support the industry.
- Dean Naudi raised the example of the Veolia / Transpacific Industries joint venture organics processing facility, EarthPower. He stated that the two companies were currently "losing" significant sums of money on the plant, and questioned why the NSW Government could not support that existing infrastructure by the way of some form of subsidy that would allow it to attract sufficient feedstock volume to be profitable.
- Christine Hodgkiss noted that the quality of the material received at EarthPower was also critical, and it was beyond the control of Veolia/ Transpacific to control the quality of waste supplied. She reemphasised the importance of engaging cleaning contractors and building managers.
- The group discussed the role of cleaning contractors, and reiterated that a licensing system would be of value in ensuring that all building owners had some control on the quality of the waste management services provided, by mandating cleaning contractors must use licensed waste providers.
- Phil Richards questioned whether it was appropriate for government to provide subsidies for what he suggested was a bad commercial decision in terms of EarthPower. He said responsibility lay with government to set waste reduction targets, establish a framework and enforce regulations, but that it was not the place of government to bail out operators that had made bad business decisions.

- Mark McKenzie suggested that, where a particular facility was in need of feedstock, local government was potentially well placed to identify where sources of feedstock and provide education and support to help address quality issues. He stated that while councils did not necessarily want to be the “meat in the sandwich”, that it may be possible for councils to help improve the viability of resource recovery infrastructure for the C&I sector.
- Rick Ralph raised the point that few governments would mandate recycled content in purchasing decisions, and said that this market pull was a more appropriate role for governments.
- Tony Khoury suggested waste levy funds be used to support industry, particularly facilities such as EarthPower.
- Adam Johnson said that operators should pick a suitable technology for the waste streams they were seeking to manage. He discussed the issue of contaminated feedstock, and noted the quality of waste was difficult to manage, suggesting education could only achieve so much. Adam suggested facilities need to be developed for waste as it currently exists, rather than attempting to modify feedstock after the facility has been built. He recommended that operators think of waste quality issues like gravity: something that is always there, and while you can fight against it for a time, it eventually comes back.
- Jenny Pickles shared her personal experience of some international waste management systems in places such as New York and Venice, where systems are relatively unsophisticated and presented some significant amenity issues. Jenny suggested that a sanity check was needed, that sometimes too much time was spent worrying about how to perfect systems that are generally working.

Presentation 7: Overview of South Australia Landfill Disposal Bans

- John Blumson presented the South Australia experience, and history of development of the *South Australian Environmental Protection Act 1993* and the *Environment Protection (Waste to Resources) Policy 2010*. He noted that all waste collectors, transporters and processors now require a license to operate in South Australia.
- John outlined the role of Zero Waste SA (ZWSA) in implementing the waste strategy (it has an advocacy and funding role, while all compliance activity is undertaken by the EPA). He noted that ZWSA began assessing data on material flows and issued a discussion paper in 2000 that flagged many of the current directions, including banning the disposal of certain materials to landfill and introducing a requirement that all waste destined for landfill must first have gone through some process of resource recovery. He noted exemptions could be applied, for instance where no market existed for a material / end-product.
- John indicated that requirements to develop a Waste Management Plan would be a key mechanism for allowing the government to monitor performance and compliance, with a mass balance approach (checking data on material in, versus material out) used to assess the performance of various recovery activities and ensure bone fide attempts to recovery resources. He noted that there is currently a lack of data, but this would improve as the scheme took effect, and that major companies in the Adelaide market had been willing to provide data to help support the Government’s policy direction, so long as there is appropriate protection of commercially sensitive information.
- John noted that ZWSA is keen to support those market players in Adelaide who have invested a lot in development of best practice waste management facilities, by providing a ‘level playing field’ where other operators are not able to dispose material directly to landfill. This includes encouraging development of “dirty MRFs” for recovering resources from mixed C&I wastes.

Facilitated discussion: 'Option 3' Place-based Restrictions on Direct Landfill Disposal

- Rick Ralph questioned how industry has reacted to ZWSA's market intervention, and John indicated they have been "fairly supportive". John emphasised that ZWSA had been discussing the changes for 10-12 years, that it was a long journey to develop broad support, but that industry was extremely supportive of efforts to develop a level playing field.
- Jenny Pickles questioned the relevance to place-based approaches, John clarified that the landfill ban (on materials which has not been subjected to resource recovery) applied only to the Adelaide area. Garth Lamb clarified the definition of 'place', for the purposes of the study, would not be considered for areas bigger than a city.
- The group asked about the success of the landfill bans, John Blumson explained that many were still to be implemented.
- Garth Lamb asked John if the licencing requirements were a major burden for smaller companies, and he advised that scale was not an issue. Rick Ralph also stated that more than 50% of WCRAQ members had fewer than 10 employees, but still all strongly supported development of a robust licencing system in Queensland.
- The group again discussed the importance of licencing and regulation of the industry. It was agreed that industry were keen for stronger licensing/ regulation to establish a fair playing field. The general view was that all waste facilities and all waste transporters should be licenced. Tony Khoury noted that, if the licencing system is right, better data can be gathered and more efficiency would flow.
- Tony Khoury discussed the role of the Federal Government in developing consistent national work, health and safety (WHS) laws, and suggested this provided a good example of delivering efficiency across the various jurisdictions. He said this was achieved with extensive consultation over several years, involving all of the States and their respective WorkCover Authorities, and was ultimately made possible by each jurisdiction adopting Model National WHS Act & Legislation. He suggested the Federal Government should consider investigating this same style of approach if it wishes to achieve a national set of common waste management laws and regulations.
- Garth Lamb noted there was strong support for South Australia's licencing system reforms, but suggested discussion return to landfill bans.
- Christine Hodgkiss queried the level of sorting required to establish sufficient resource recovery prior to landfill disposal, and specifically if access to a recycling bin on the premise would be sufficient to demonstrate that the waste stream had been subject to resource recovery. John Blumson indicated there was an exemption for MSW residual waste where kerbside recycling systems were in place, but said that mixed C&I waste would still require sorting prior to landfill disposal.
- John indicated that there is an ability under the Act to make amendments relatively quickly, and that ZWSA expects to refine the system as more data becomes available following implementation of the various stages of the landfill bans.
- Mark Jackson asked whether ZWSA had allocated additional resources to ensure compliance with the Act. John indicated that significant additional resources had been appointed in the EPA focussing on illegal operators. Ron Wainberg asked whether this was funded by the waste levy, John indicated that this was the case and that the levy – which is headed toward \$50/t – was returned 50% to ZWSA and 50% to the EPA.
- Colin Sweet discussed infrastructure needs and the importance of good planning to enable development of critical infrastructure, suggesting that in many jurisdictions it would be difficult for the private sector to develop sufficient infrastructure to service a SA-style ban on mixed waste to landfill. He noted that it could cost a company \$3-5 million to try and develop a site, which may or may not get final approval to operate.

- Garth Lamb asked Adam Johnson to explain the WA Government approach to waste infrastructure planning. Adam said the WA Government tended to take a long-term view of many infrastructure planning decisions (in waste and other areas) and suggested that this sort of long term view was preferable when determining infrastructure needs. He described a process where the government earmarks and may acquire land to be designated for future waste infrastructure developments.
- Paul Starr discussed research that had been conducted in 2009 to inform development of the *National Waste Policy* and noted that national scale modelling identified a general need for a large number of additional resource recovery facilities (especially in relation to organic wastes).
- Mark Jackson discussed the issue of infrastructure planning, and noted the Richmond Review in NSW had recommended an infrastructure needs analysis be undertaken. Mark suggested that this planning issue was better looked at on a state-level than at a local government level, and indicated that a need for some 16 new organics facilities and around 27 C&I processing facilities had been identified in metropolitan Sydney.
- Garth Lamb noted there seemed to be a general interest in the South Australian approach.
- Tony Khoury questioned whether it was appropriate to take a national approach to waste issues. Jenny Pickles indicated that there were efficiencies which could be gained and that many of the waste contractors operated on a national level.
- Phil Richards noted that each state had different issues and unique circumstances, and that the regulatory settings in each state were different in terms of differing waste levies etc. He noted that SA appeared to be “light years ahead” of other states, and questioned if national approaches were possible given these differences.
- Garth Lamb agreed that there were major differences between the various states, and even between different areas within one state (such as South East Queensland compared to Far North Queensland), and suggested this was a key reason that place-based approaches, tailored to local conditions, could be more attractive than state-wide efforts alone.
- Mark Jackson stated that he thought it was valuable to have a national conversation about place-based approaches, and whether they are worthy of further consideration, as this would streamline discussion and policy development within the various individual jurisdictions.

Lunch Break

Facilitated discussion: Other Place-based Opportunities (including options 4-7)

- The group discussed the importance of data. It was suggested that contractors hold good data sets, however might be unwilling to share this because of commercial considerations. The South Australian example of data being shared where operators saw advantages in helping the Government develop a level playing field was discussed.
- It was raised that there is a need for data on a business type/ facility level (e.g. how much waste does each type of business generate?). A national project investigating this is currently underway.
- It was suggested that while collection contractors keep records of the materials collected, most of the data held is GPS based and related to run profitability. Often there was volumetric data (size of bins) but a lack of data on how full those bins are (in terms of weight). Ron Wainberg also noted that the data would not be compositional, and suggested it may therefore not be very useful.
- Mark McKenzie highlighted the importance of data to form the basis of planning decisions, and indicated that data on C&I waste would identify opportunities to support the industry. Greensquare, a new development in the Sydney area, was discussed and Mark indicated that the City would be trialling new precinct-based approaches. There was general support in the room for trialling such approaches in new developments.

- The group discussed NABERS Waste building ratings as a bottom-up approach. John Blumson discussed ZWSA's waste audit service, and noted that all audits identified significant resource recovery opportunities for businesses. He suggested one issue was that contractor contact with customers is generally via a salesperson focused on offering a good commercial deal, while government was more concerned with resource recovery.
- Paul Starr asked about the level of GPS data waste contractors collect and whether this was linked with data on quantities. Christine Hodgkiss stated that this data was collected, however suggested there were complications relating to accuracy of quantity data. Ron Wainberg also noted there would be no compositional data.
- Tony Khoury stated it would be a mistake to assume C&I precinct collections could be modelled on a replication of local government domestic waste style collections as there were many, many variables including types of materials presented for waste and recycling, differing volumes, collection frequencies, bin numbers, bin types, locks, gates, storage areas and business access times. He said there would also need to be consideration given to the existing rights of waste industry workers, the Goodwill on balance sheets of the many Contractors that may be adversely affected by restricted place-based C&I decisions, including the many long-term national and state contracts that are in place and the reluctance of many Councils to be involved in C&I waste.

The meeting closed on-time at 1PM