

Capital Gains from Recycling



A White Paper into the effects of aesthetic containers on recycling rates in urban high rise developments

September 2010



Intelligence



Introduction

Local councils face significant extra costs if they fail to meet stringent domestic recycling targets set by UK Governments - as well as the European Union. At present, it costs a typical London Borough around £12 to process every tonne of recycling materials put out. Research shows that a council must pay around £61 if that same tonne of material is sent to landfill, with another increase of £8 per tonne, scheduled for April 2011. Add to this figure the fines if EU directives are not met – up to £3m - and the economic argument for increased levels of domestic recycling is absolute.

Against this backdrop, Taylor has recently commissioned a 7-week trial, conducted by the independent LRS Consultancy across three London boroughs, to determine the impact of installing Node mini recycling centres and Street housing units on recycling levels at high rise multi-occupancy dwellings in London. The Node and Street units are aesthetically designed containers which allow easy access to recycling facilities near the entrance to a property, and enhance place shaping whilst still able to be emptied via existing infrastructure.

The London trial, carried out from 14th June to 2nd August 2010, was undertaken to build on the results from earlier research (published in Jan 2010) conducted by Taylor

in the North Lanarkshire area of Scotland into recycling rates for multi-occupancy high rise buildings using aesthetic node recycling systems sited in public spaces. This research reported excellent results: 93% of the residents of the multi-occupancy dwellings, stating that they now recycle more because the node facilities are easy to use, highly visible and on their doorstep.

London was selected as the ideal venue to validate the Scottish research, as it is the UK capital for high density housing (HDH), with some boroughs, such as Hackney, Lambeth and Tower Hamlets, having occupancy figures as high as 50% for high rise dwellings, against the UK average of 20%. In addition, historically, London has

a poor record for recycling. This is due to many factors, including poorly designed waste and recycling infrastructure, with bin stores out of sight in vulnerable positions, residents not wanting unsightly bins in public places – but still wanting ease of access, and existing methods of collection.

The partner boroughs participating in the trial: Westminster, Lambeth and Hackney, were selected as being generally representative of London boroughs, with a high proportion of flatted properties, varied population types and differing political and social landscapes. The locations chosen for installation of the Node containers were ten housing blocks across the three boroughs.

Scope of the Trial

LRS Consultancy was appointed to conduct the 7-week trial due to the consultancy's proven relationship with London Boroughs. Initially, LRS and Taylor met with each of the participating boroughs to ask them to recommend site locations that would benefit from the installation of the new recycling units. Working in partnership with housing associations and residents, each borough then selected its trial locations - ten in total - across the three boroughs. These locations represented, as far as possible, different socio-economic, political and geographical backgrounds.

The proposed locations were then visited by Taylor and LRS staff to assess their suitability for the installation of either Node or Street container housings. A number of observations were made on the sites, including the number of household bins currently serving each location (enabling recommendations to be made as to the number of Node/Street units that would be required), accessibility for collection crews, any visible communication opportunities (e.g. notice boards), space available for bins, and whether there was any evidence of fly tipping or antisocial behaviour at the site (which could indicate that the bins may be open to abuse from residents).

The Node mini-recycling centres are uniquely produced by Taylor and the standard unit is comprised of 4 x 800 litre containers (which equates to a total capacity of 3,200 litres). A single 800 litre unit can also be positioned in a corner, or two can be joined to wall, while three units can fit around a corner. The individual containers lock into a central column which is attached to a freestanding metal base plate. Each individual 800- litre containers can be lifted by a standard RCV. The secured central column means that the units cannot be moved from locations by residents, and this also eliminates the problem of crews returning bins to the wrong locations.

The modular Street Housing units are designed to store an 1100 or 1280 litre Taylor Continental bin whilst maintaining a minimally sized envelope. The stylish design makes them visually appealing and means that recycling bins can be placed in prominent areas without detracting from the local street scene.

The container housing units are opened using a standard key and the bins are wheeled out for emptying into a standard RCV. This solution again maintains the recycling containers in a set location for both residents and crews.

An additional benefit of Node and Street solutions is that both use a galvanised steel base plate, which allows the units to be fitted virtually anywhere without the need for planning consent as they are non- permanent fixtures; this also allows for relocation of the units if required to suit tenant needs.



“ The evidence gathered in the trial presents a compelling case for the use of aesthetic containers in achieving high recycling levels from flat properties. ”

Due to the speed of the trial, residents were informed of its operation by flyers and posters, a low level communication effort that enabled results to be gauged objectively with minimum promotional input. It can be argued that other initiatives such as doorstep promotions would also have been beneficial, but these were ruled out due to the tight timeframe of the trial.

Initial communication was via a letter produced by LRS and distributed by the boroughs to their housing associations and managing agents; and by them, in turn, to all residents in the blocks receiving the new bins. Each letter was sent out a week before the new service was due to commence. It informed residents of the new location of the bins, what could be recycled in them and included a photo to illustrate what they look like.

As a complement to the LRS letter, Taylor provided a template for a poster which could be adapted by each borough and sent out to their housing associations and managing agents to be used in communal areas to advertise the new facilities. The new containers were also labelled with stickers, bespoke to the different council's recycling services, to illustrate what could be recycled in the bins.

The bins were installed 3- weeks prior to commencement of the official trial monitoring; this enabled the residents to get used to using the new bins before data on their use was collected. It also allowed time for residents to formulate opinions on the new bins, which was an essential part of the monitoring operation undertaken by LRS.

In order to assess the use of the Node and Street containers, an LRS monitoring officer conducted fill level monitoring for 7- weeks, from the w/c 14 June to 2 August. For report purposes, weeks 1-3 were monitored as a bedding- in period, with focus on the last 4-weeks for the major deliverables of data.

The fill level monitoring activity involved visiting each site the day (or hours) before the bins were due to be collected, to visually assess the volume of materials that had been deposited in the bin. Visual assessments were conducted by lifting the



container lid (in the case of the Node bins) and by unlocking the housing unit (in the case of the Street containers).

Fill levels were recorded in 5% intervals from 5% to 100%. The results were logged and later transferred to an electronic database for analysis. The fill levels were mapped against a template provided by Taylor to enable percentage fill rates to be converted into kilograms, depending on the make- up of the contents (dry mixed recyclables, paper etc). Any obvious contaminant materials that were viewed in the bins were also recorded by the monitoring officer.

Although the majority of the trial ran smoothly, a barrier to data capture was encountered at some sites due to collection dates being changed without notifications to the LRS

auditors. This means that some bins had been emptied prior to inspection and therefore final data reported would be expected to be higher; but in order to have truly realistic information, no assumptions have been made for missing data. In addition, the trial was conducted over the summer holiday period, with the final two weeks of the trial coinciding with the beginning of the school holidays. The volume of recyclables generated over the course of the last two weeks of the trial may, therefore, be less than usual due to residents being away over the period.

The recycle levels collected at each site were worked out by equating them to the fill levels recorded, and matching this to average bin weights, in the case of Westminster Borough, and by comparison with Taylor

and the Waste Resources Action Programme (WRAP) data, in respect of Hackney and Lambeth boroughs. Westminster was only the Borough able to provide benchmarking data that was sufficient to allow a comparison with the performance of the new containers against the old containers. As a result, LRS used the WRAP flats performance summary table on fill level monitoring for its bench indicator on the remaining two boroughs.

When calculating the average weight of recycle measured in kilograms per household per week (kg/hh/wk) collected from each site, the data from the last four weeks of monitoring was used. This is due to the assumption that week 4 is the point from which the scheme becomes established and residents are educated as to its function.

Results – Westminster

Two trial sites were chosen in Westminster, Bronwen Court and Scott Ellis Gardens. These two locations were equipped with 8 Street units offering a total capacity 10,240 litres. Both sites were collected from twice a week, and were, therefore, monitored for bin fill levels twice a week on the day before each collection day.

The LRS results revealed that a total of 5.5 tonnes of mixed recyclables were collected from Bronwen

Court and Scott Ellis Gardens over the 7- week trial period, including an average of 1011kg/wk mixed recyclables over the final four weeks of the monitoring period. This equates to an average of 1.8kg/hh/wk collected from the 550 households served by the Street bins in the final four weeks of the trial.

On the face of it, this figure indicates that the site is performing below the WRAP average of 2.54kg/hh/wk. However, benchmarking

data provided by LB Westminster indicates that the site has been performing at an average of 1.58kg/hh/wk between January to April this year, so the LRS figure indicates an increase in recycling levels of 13.9%.

It should be noted that if the site continues to perform at week 7 levels of 2.4kg/hh/wk then it will be close to achieving the performance of a bring site on an estate expected by WRAP.

“ London was selected, as it is the UK capital for High Density Housing, with some boroughs, such as Hackney, Lambeth and Tower Hamlets having occupancy figures as high as 50% for High Rise dwellings. ”



Results – Lambeth

“ The design makes you stop and think about what you can put in a bin. ”

Three trial sites were chosen in Lambeth, at Crownstone Road, Landsell and Hardham, and Sacketts and Cliffsend House. The first two locations were provided with Node bins for the trial, while the third had both Node and Street containers.

The Crownstone Road site was collected from on a weekly basis; in all cases the monitoring of the site was conducted the day before collection was due. The monitoring reported a total of 4.45 tonnes of mixed recyclables collected from the Crownstone Road site over the 7 week trial period, with an average of 620kg/wk mixed recyclables collected over the final four weeks of the monitoring period. This equates to an average of 6.2kg/hh/wk for the 100 households at Crownstone

Road served by the Node bins, a figure which indicates that the site performed very well, as it is considerably higher than figures in the WRAP flats recycling guidance. These indicate that mixed recycling, bring bank systems can expect to generate 2.54kg/hh/wk.

A total of 3.9 tonnes of mixed recyclables were collected from the Landsell and Hardham House sites over the 7 week trial period, with an average of 533kg/wk mixed recyclables collected over the final four weeks of the monitoring period. An average of 7kg/hh/wk was collected from the 76 households served by the Node recycling centres; this indicates that the site is performed at a level considerably higher than average WRAP figures.

At the final Lambeth site, Cliffsend and Sacketts House, a total of 1.9 tonnes of mixed recyclables were collected over the 7 week trial period. Over the pivotal final four-weeks of the monitoring period, an average of 314kg/wk mixed recyclables were collected, equating to a mean of 5.2kg/hh/wk from the 60 households served by the Node and Street units. This figure indicates that the site performed considerably higher than average WRAP figures.

The combined results for all 3 sites show the collection of 10.3 tonnes of mixed recyclables with an average household performance of 6.1kg/hh/wk an increase of 141% against the benchmark WRAP guidance level of 2.54kg/hh/wk.



Results – Hackney.

“ London has a poor record for recycling. This is due to many factors, including poorly designed architecture, with bin stores out of site in threatening positions and residents not wanting ugly bins in public places. ”

The Hackney trial site chosen was Lister Court: this was provided with 2 Street units for paper and 4 Street™ containers for mixed recycling. Combined, these containers provided a total recycling capacity of 6600 litres.

LRS monitoring reported a total of 1.3 tonnes of mixed recyclables collected from the Lister Court site over the 7- week trial period,

including 924kg of paper. An average of 198kg/wk of mixed recyclables were collected over the final four weeks of the monitoring period, equating to an average of 3kg/hh/wk for the 66 households served by the Street units.

At Lister Court paper was collected in a separate bin from plastic bottles, cans and glass bottles. WRAP's flats recycling guidance indicates that for

bring bank collection systems that are partially separated (e.g. paper collected separately from mixed recyclables) then an average of 2.51kg/hh/wk can be expected to be generated. Using this benchmark it apparent that the site performed at above average levels.

The Hackney trial site shows a recycling increase of 19% above the anticipated WRAP guidance levels.

User Feedback

In addition to monitoring at all sites, LRS also surveyed residents at each trial location in order to gauge their opinions of the new recycling bins. A total of 49 user surveys were completed across all of the sites. These were conducted at the same time as the fill level monitoring took place.

The look of the units

- “(The bins) look more professional, before rubbish was all over the place”
- “I like them; they are clean, nice and not dented, unlike the old ones”
- “They look nice and tidy, 100% better than the old bins”
- “Tidier and people leave less rubbish around, they don't overflow; before the bins used to overflow a lot”
- “Nice because they are black and quite discreet”
- “Classier looking”

Ease of use

- “It (the labels on the new bins) makes it clearer to know what to recycle” / “Easy to find out what you can put in these bins”
- “(You) don't have to lift the lid (on street units) so it will stop people from being lazy and leaving recycling outside” / “Easy to use as you don't have to lift the whole lid”
- “They are easy to use because before things would fall out in front of the bins but now they are kept much cleaner”

Behavioural change

- Two residents spoke about changes in behaviour on their estate as a result of the new street bins, one saying “I think people now won't leave rubbish outside the bins”, the other saying “People look at the labels and they draw attention to what they can put in the bin”
- When asked if their recycling behaviour had changed recently one resident said “Yes, I spend more time separating; you realise certain things cannot be put in the bins. The design makes you stop and think about what you can put in.”



Conclusions

- The findings of the London trial provide hard evidence that getting the right infrastructure in the right place gets the public to recycle in increased quantities.
- Multi-occupancy dwellings are an untapped source of potential for improving recycling rates across London boroughs – and indeed any areas in the UK where high density housing is prevalent.
- The potential for even greater increases in recycling rates exists through a more comprehensive communication campaign that highlights the benefits of Node and Street bin recycling.
- The Place Shaping abilities and aesthetics of recycling containers are vitally important factors in determining resident usage.
- The research provides a road map for London borough councils to unlock the potential of high rise and multi-occupancy dwellings and increase recycling rates.
- Achieving higher recycling rates requires the correct allocation of funding between large scale waste processing/treatment facilities and collection containers to ensure that the optimal infrastructure is in place at community level.
- With the Node and Street systems being fully compatible with the majority of existing waste collection infrastructures in the UK, this solution offers Local Authorities the fastest method of implementing an effective flats recycling programme or updating an existing scheme.



Key Findings

- The evidence gathered in the trial presents a compelling case for the benefits and use of aesthetic containers in achieving high recycling levels from flat properties.
- A total of 17.1 tonnes of recyclables were collected from the trial sites over the 7 week period.
- The amount and mix of recyclables collected throughout the trial equates to the diversion of over 16.7 tonnes of CO₂ from landfill.
- The sites at Scott Ellis Gardens and Bronwen Court in Westminster have increased recycling levels by 13.9%.
- All of the sites in Hackney and Lambeth are performing above the average performance figures quoted for bring bank recycling systems in the WRAP flats recycling guidance
- LRS have calculated that the Node bins collected an average of 7kg/hh/wk over the course of the trial and the Street Housing containers collected an average of 3.9kg/hh/wk.
- During the user surveys a large number of residents commented that they liked the visual appearance of the bins and that they have assisted with clearly communicating what can and can't be recycled.

Lambeth
Landsdell &
Hardham House
7kg/hh/wk
An increase of
175%



Lambeth
Crownstone
Road
6.2kg/hh/wk
An increase of
144%



Lambeth
Cliffsend &
Sacketts House
5.2kg/hh/wk
An increase of
104%



Westminster
Bronwen Court &
Scott Ellis
Gardens
An increase of
13.9%



Hackney
Lister
Court
3kg/hh/wk
An increase of
19%





Intelligence

Taylor Intelligence, a division of Taylor, the provider of innovative recycling and waste container solutions, horizon-scans trends in the waste and recycling collection and containment marketplace. It provides analysis and commentary on the impacts of these trends and legislative developments for waste containment and recycling collection.

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