

Litter Innovation Fund (LIF)

Final Report

Further to your award it is important for us to evaluate how effective your research project has been and if the wider aims of the fund have been achieved.

The purpose of the Litter Innovation Fund is to support councils and communities in the development and evaluation of innovative approaches to tackling litter, which have the potential to be implemented more widely. The Litter Strategy also encourages people to use and contribute to online best-practice 'hubs', to help test and refine new innovations, share learning and extend the implementation of best-practice. It is therefore a condition of your award that you provide a full report of your project, to share in the knowledge and insights gained from your experiences and, if successful, to enable others to replicate it.

To assist these two aims, we require you to complete the following document. Section A sets out a template final report which is designed to provide the information needed to identify interventions with the potential for wider application, and to enable your project to be implemented by others if appropriate. Please consult the monitoring and evaluation guidance for further help on answering any questions. You can also contact us at LitterFund@wrap.org.uk.

As set out in the guidance to applicants once we have signed off this report, successful applicants are expected to make the information from Section A of this template available online, to share best practice, enable others to replicate your project and learn from your experience. Information that you share with us may also be subject to requests for disclosure by Defra or MHCLG under the Freedom of Information Act or Environmental Information Regulations. It is likely therefore that information from this report will be released into the public domain. If there is any information contained in your report that you wish to remain confidential or regard as subject to copyright or commercially sensitive please clearly identify it. In particular, please do not include personal data of any individuals.

The completed form should be e-mailed to litterfund@wrap.org.uk

LIF Reference Code	ENG102-012	Date	04 December 2018
Organisation Name	Keep Britain Tidy	Completed by	Rose Tehan & Andrea Turner

Project Abstract

Please provide an overview of this report, up to 400 words (Grant funding amount received, Aims, Results and Scalability of the project)

Keep Britain Tidy has a range of anecdotal evidence to suggest that removing public litter bins from certain locations can have a positive effect on litter levels. To our knowledge, no robust evidence on this currently exists, yet our research suggests that this idea is of considerable interest to land managers.

Over the spring and summer of 2018, Keep Britain Tidy (supported by Parks for London) partnered with Ealing Council and Merton Council to trial the removal of bins across three London parks, with a view to identifying whether bin removal is an appropriate intervention for reducing litter. The three parks were:

- Maytrees Rest Garden (Ealing Council)
- North Acton Playing Fields (Ealing Council)
- Wandle Park (Merton Council)

The experiment monitoring and evaluation framework consisted of:

- Litter monitoring to identify the impact on littering behaviour - This involved weighing all litter dropped in the park and placed in bins (prior to bin removal) at the parks for three, four-week periods - before the bins were removed, immediately after they were removed and again two months after bin removal to identify any longer term impacts.
- Perception surveys with park users to assess their views on the litter levels and the visual appearance of the parks – again conducted across the three phases.
- Interviews with the partners to review the findings and the pros and cons of bin removal, and develop recommendations for other land managers considering the approach in their areas.

In total, the project cost £13,968 (ex. VAT) to deliver (including staff time and direct costs spent on the park user perceptions monitoring).

The results were as follows:

- There was an increase in the amount of litter on the ground in all three parks in the month immediately following the bin removal, and this increase was sustained in two of the parks in the longer term monitoring. However this data is limited as it does not capture litter as a proportion of the overall amount of waste taken into the park, which is likely to have fluctuated over the monitoring period with changes to footfall (e.g. during warmer periods and holidays, when the number of visitors to parks tends to increase).
- The total amount of waste in each park decreased significantly from the baseline monitoring period following bin removal (by an average of 68% across the three parks), indicating that a large proportion of park visitors took their rubbish with them. Both partners informally monitored on-street litter bins in the areas immediately surrounding the parks and felt confident that park visitors were not using these in place of the removed bins.
- The park user perceptions results were mixed. Perceptions of litter, fly-tipping and the overall attractiveness of the park were not impacted in Maytrees Rest Garden, and in fact improved slightly following bin removal. Perceptions in the North Acton Playing Fields were positive in the month immediately following bin removal, but declined in the longer term monitoring. Perceptions in Wandle Park were generally negative across both monitoring periods following bin removal, though more positive in the month immediately following bin removal.
- Positively, when asked what they would do with their rubbish without bins in the park, the majority of respondents across all three monitoring periods said that they would take their rubbish home.
- Both partners felt that the amount of litter and fly-tipping had visibly reduced in their parks and were planning to trial the experiment in other selected parks to tackle these issues.

Overall, due to the seemingly contradictory results, we consider the findings from this experiment to be inconclusive. Nonetheless, due to some positive results (for example, the positive feedback from partners, the significant reductions in the overall amount of waste being left in the parks from the baseline to intervention monitoring periods, and positive self-reported waste disposal behaviours by park users), we believe that further trialling of bin removal is worthwhile.

Keep Britain Tidy recommends that land managers continue to trial bin removal to build further evidence of its impacts. Trials should include a robust monitoring and evaluation framework, including footfall monitoring to capture fluctuations in visitor numbers during different seasons, warmer weather and special events, alongside behavioural observations and/or short intercept interviews to understand the amount of waste taken out of the parks by visitors once bins have been removed. Monitoring should be conducted across at least three phases, including baseline and longer term monitoring phases.

Where budget allows, control sites could also be considered for future iterations of the experiment, whereby a selection of sites are monitored alongside the intervention sites without any intervention actually taking place. The indicators monitored (i.e. litter/waste and park user perceptions) should be exactly the same as those monitored at the target sites, and should be conducted over the same time periods (including baseline monitoring). There should be at least one control site per target site, as monitoring multiple locations will help to discount other variables that may influence results (i.e. influences beyond the control of the project).

It is strongly recommended that future trials engaged key stakeholders in advance to gain their support for the initiative (e.g. residents and ‘friends of’ groups, elected members, etc.). A prepared ‘frequently asked questions’ document to respond to public enquiries is also strongly recommended. This should include a clear rationale as to why specific parks were chosen.

Final Report

What did you want to achieve?

Please set out the project context, purpose and aims. This will have been laid out in your original application. For sharing purposes please include this, and any clarification needed

- What specific problem(s)/area(s) did your intervention target, and why did you choose it? Please include a description of the local context.
- What did your intervention aim to achieve? Set out the intended outcomes and impacts.

Background

Keep Britain Tidy had heard a range of anecdotal evidence to suggest that removing public litter bins from certain locations has a positive effect on litter levels. For example, land managers had told us that when they had removed public litter bins from areas such as foreshores and parks (e.g. because the bins were attracting the wrong types of waste), they had subsequently observed an overall reduction in the amount of litter at the sites. This suggests that the removal of bins at certain location types may reduce rates of overall littering.

To our knowledge, prior to this experiment, no robust evidence existed globally regarding the impacts of bins removal on local litter levels, nor on the

perceptions of people who use the locations. Yet our research suggests that there is much interest in better understanding the impacts of bins removal, not only within England, but globally. Therefore, Keep Britain Tidy wanted to conduct an experiment to robustly monitor and evaluate the impacts of bins removal in parks and green spaces, with a view to identifying whether and in what circumstances bin removal is an appropriate intervention for reducing litter.

Experiment aims and objectives

To objectives of the experiment were to identify:

- the impact of the intervention on litter levels in the parks
- the impact of the intervention on park user perceptions of the parks and how they are managed; and
- recommendations for land managers with regards to using the bin removal approach to reduce litter.

What was your project plan?

- Describe the project plan – what you intended to do, including details of intervention site(s), timelines, use of resources (e.g. materials) and involvement of people and other organisations. Include details of a control or comparison site, if applicable.
- How did you expect your intervention to achieve its aims and intended impacts (see the ‘intervention pathway’ diagram in the Monitoring & Evaluation guidance)

Delivery and timelines

The experiment was designed to be delivered over three phases:

- Phase One: Baseline monitoring (four weeks) – this involved monitoring rates of littering and park user perceptions at the three parks before the removal of any bins.
- Phase Two: Bin removal and immediate impact monitoring (four weeks) – this involved removing all litter and recycling bins from the three parks, immediately followed by further litter and perceptions monitoring.
- Phase Three: Longer term impacts monitoring – this involved further litter and perceptions monitoring, conducted two months after the removal of bins from the park/green space.

Our intended timings for delivering the experiment were as follows:

Task/phase	Timings
Partner(s) confirmed	By mid-April 2018
Inception meeting and site visits	w/c 16 April 2018 w/c 23 April 2018
Baseline monitoring	May 2018
Bins removal and monitoring	June 2018
Longer term monitoring	August 2018

Experiment partners

Our original intention was to partner with one park manager partner to deliver the experiment across three parks or green spaces in their area, however ultimately we partnered with two park managers (Ealing Council and Merton Council), as detailed in the *What Did You Do?* section below.

Partners were recruited via a Call for Partners distributed by the charity Parks for London to its member organisations (London park managers) on Keep Britain Tidy's behalf. Keep Britain Tidy has an ongoing partnership with Parks for London which involves trialling innovations and conducting other research to tackle litter and fly-tipping issues in parks.

The Call for Partners process involved interested organisations submitting a completed Expression of Interest (EOI) form which asked for information about their proposed parks for the experiment, such as the type of park and how it is used, the number and types of bins present, and current cleanings practices and routines in the parks. Keep Britain Tidy selected the partners based on the commitment they demonstrated to the project and its monitoring requirements, alongside the information they provided about their selected parks (e.g. parks that represented a range of different park types, parks with enough bins for the purposes of the experiment and an appropriate existing cleansing routine for conducting the litter monitoring).

The partners were responsible for:

- selecting appropriate locations for the bin removal experiment and covering all costs involved in the removal and reinstatement (if applicable) of the bins;
- attending an inception meeting and site visit with Keep Britain Tidy, ensuring that all staff who will be involved with the litter monitoring attend this meeting;
- conducting litter monitoring throughout the duration of the experiment. This involved collecting and weighing (using luggage scales provided by Keep Britain Tidy) all litter dropped on the ground and in bins (when in place) at the locations for four weeks before the removal of bins, four weeks immediately after the removal of bins and for a further four weeks, two months after the removal of the bins to test (12 weeks in total); and
- providing feedback on the experiment via a telephone interview.

Keep Britain Tidy's role

Keep Britain Tidy was responsible for:

- Overall project management
- Design of the overall pilot methodology and data collection guidelines and tools (litter monitoring form and guidelines, park user perceptions survey questionnaire, partner interview questionnaire)
- Providing hand held luggage scales, forms and guidelines for monitoring litter and fly-tipping at the sites
- Partner briefing
- Park user perceptions surveys, designed by Keep Britain Tidy and conducted by our partner fieldwork agency Feedback Market Research – 150 respondents per park (50 before bins removal, 50 immediately after and a further 50, two months down the line)
- Partner interview
- Analysis, evaluation and reporting.

Outputs and outcomes from the experiment

Our intention was that the experiment would produce evidence and recommendations around the impacts and effectiveness of bins removal as a means for reducing litter in parks and green spaces. We anticipated that the bins removal would also reduce litter at the three parks.

Following sign-off from Defra, our intention was to produce a publically available report on the experiment, including our recommendations for other land

managers. We also planned to disseminate the findings via our networks and events, and those of Parks for London. To further share the outcomes of this project, we also intend to produce a case study about it for submission to the peer-reviewed *Journal of Litter and Environmental Quality* which is published by Keep Britain Tidy.

Communications

In order to solely test the impacts of bin removal at the target sites, this project did not use communications addressed at the target audience (i.e. park users). Rather, communications activity for this project will be as follows:

- Providing a 'lines to take' questions and answers document for the park manager partner organisations to use for any queries they receive on the removal of bins from parks
- Communicating results of the trial to Keep Britain Tidy's networks and wider land manager networks, with recommendations regarding the removal of bins.

Hypothesis

Our hypothesis was that removing bins from the parks would reduce the amount of litter there. We expected that the absence of bins would prompt more people to take their rubbish with them when leaving the parks/green spaces and either take this home or dispose of it in the next available public bins outside the parks.

What was innovative about this project?

- Describe how your project differs from existing approaches, or extends/develops previous research.

We consider this project to be innovative because it trialled an approach that may feel counter-intuitive to some people e.g. some people may feel that removing bins could only ever increase the amount of litter left. It takes an opposite approach to traditional litter management methods by removing bins rather than providing more bins.

We are also aware that there is a lot of interest nationally and globally in whether bin removal is an effective approach to litter management, and that there is a gap in robust evidence around this.

We designed this experiment with the intention of generating insights that could change the status quo for park management by encouraging local land managers to trial bin removal in their own locations for the prevention of litter and fly-tipping.

What did you do?

- How did you implement your project in reality? Please describe what happened during your project.
- Did anything change from your original plan, and if so, why? Did you encounter any problems or unexpected issues that might have affected your results?
- How did people react during the project?

To enable others to replicate your project, please include images of any key signage, posters, graphics etc. that you used, as well as photographs, maps or other essential information to show how interventions were deployed. Documents can be provided as appendices if appropriate. The information you provide should not be subject to copyright and should be able to be shared freely

Changes to original project plan

Overall, the experiment was delivered as outlined above, with the following exceptions:

- We partnered with two local authorities instead of one to deliver the experiment across the three parks: Ealing Council (Maytrees Rest Garden and North Acton Playing Fields) and Merton Council (Wandle Park). The reason for this is that we felt that the parks proposed by both partners provided a complementary range of park types and issues for the experiment.
- The monitoring of fly-tipping (counts and types) was completed differently by each of the partners and so was not used in the experiment evaluation. Instead, the assessment of fly-tipping impacts is based on the partner interviews (reported impacts on fly-tipping based on partners' observations) was used instead.

Target site details

- Maytrees Rest Garden is a small urban park located opposite South Ealing underground station. The park has gardens and seating, but tends to be used as a thoroughfare. The park had an issue with residents of the surrounding streets leaving household rubbish at the park entrance, bins and elsewhere, and with commuters littering coffee cups and other items on their way through the park. The park has no active residents of 'friends of' groups attached to it. The park originally had four litter bins on site and was cleansed (bins and litter picking) three times per week.
- North Action Playing Fields is a large Green Flag park with sporting facilities, including three cricket pitches (summer), four football pitches (winter),

five tennis courts, a playground, café and community use room (managed by a local community group). The park had issues with litter but not fly-tipping. The park has an active local residents group attached to it, the West Acton Residents' Association. The park originally had 11 litter bins on site and was cleansed (bins and litter picking) daily.

- Wandle Park is a large urban park located off Merton High Street and alongside the River Wandle. It has a more natural and informal design compared to the other two parks, and features grassland, wetland and wooded areas. The park has an active local residents group in the area. The partner selected this park for the experiment because they felt that it was overall most representative of all of their parks. The park also had issues with household fly-tipping and waste disposal in bins by residents surrounding the park (particularly by those living in flats). The park originally had nine litter bins and was cleansed three times per week (bins and litter picking), including one cleanse of weekends.

Response from park users and local residents

As noted above, in this experiment, Keep Britain Tidy and the partners did not publicise the bin removal so as not to influence the results of the experiment. The bins in the parks simply disappeared overnight and this appears to have come as quite a shock to park users. Both partners received a number of complaints from residents, while in North Acton Playing Fields, some dog walkers left bagged dog waste in a pile on the ground where a bin had previously been situated, apparently as a sort of protest. These issues are discussed in the *OUTCOME: Results and Data Analysis* section further below.

How did you monitor your intervention?

Indicators:

- What indicators did you set out to monitor, in order to help understand if your project achieved its intended outcomes and aims?
- Were you able to establish a baseline, i.e. by collecting information on the original state of your indicators, before your intervention began?
- What were your intended indicators of success?

Indicators used to monitor the impacts of the project were:

- *Weight of litter (kg) and volume of litter (bag counts) on the ground and in litter bins (bin monitoring for the baseline phase only) at the three parks across three phase – before the bins were removed, immediately after they were removed and again two months after bin removal to identify any longer term impacts.*
- *Perceptions of members of site users to assess their views on the litter levels and the visual appearance of the parks – again conducted across the three phases.*

- *End of project interviews with the partner councils and their contractors.*

A baseline of the weight and volume of litter was established prior to the intervention being implemented. This was a four week phase where litter placed in bins and on the ground was monitored, and then this was repeated for an additional four weeks once the bins had been removed and again two months later.

Perception surveys with park users to assess their views on the litter levels and the visual appearance of the parks – again conducted across the three phases – with a target of 50 surveys per park per phase.

End of project 60 minute telephone interviews with the partner councils and their contractors, to review the findings and the pros and cons of bin removal, and develop recommendations for other land managers trialling bin removal in their areas.

For the intervention to be deemed successful, it was intended that the intervention would a) show a reduction in litter, b) show that public perception of the three parks was not negatively impacted and c) overall feedback from the partners and their contractors was positive and that bin removal was something they would consider trialling again elsewhere in their boroughs.

Other influences and understanding causality

- How did you try to understand if any changes that occurred in your indicators were caused by your project, rather than other external factors?
- Were you able to identify and monitor a comparison or 'control' site?
- Describe the context and what happened during your intervention e.g. description of the weather, any events, any other campaigns (local or national), etc.
- What, if any, data/information did you record on external factors that may have influenced your data?
- How did you attempt to mitigate against them?

Our intention was that by using baseline monitoring at the sites and by triangulating the three sets of data we collected (litter weights, park user perceptions and partner interview) we would be able to generate detailed evidence of the impacts and effectiveness of the intervention, and discount external variables that could have had an influence on the results. For example, if litter went down significantly from the baseline following bin removal and this was perceived to be the case by both the park users and partners, we could be confident that removing the bins had had an impact

on littering.

Unfortunately, however, the littering monitoring was limited and did not give a complete picture of rates of littering at the site over the duration of the experiment. When piloting interventions to reduce litter, Keep Britain Tidy would normally monitor both litter dropped on the ground and rubbish placed in bins at a site for the full duration of a pilot (baseline through to intervention/post intervention monitoring). This identifies the amount of litter present as a proportion of the overall amount of waste disposed of at the site, and tracks changes to this proportion over time. Monitoring in this way allows for fluctuations in footfall at the site to be accounted for. For example, the number of visitors to a site might increase in warmer weather, school/bank holidays or special events, and increases in visitors tends to increase the amount of waste being disposed of at a site (either in a bin or as litter). Therefore, monitoring litter as a proportion of overall waste provides a more accurate measure of the impact of an intervention.

To address this gap in evidence, Keep Britain Tidy recommends using behavioural observations or intercept interviews in future bin removal trials to complement the litter monitoring (due to budgetary limitations, these were not possible in the experiment). The aim of these would be to identify the amounts of waste being taken in and out of the park by visitors, and left behind. These should be conducted over different times of day and days of the week to ensure that a range of behavioural contexts are captured, and the sample of timings should remain consistent throughout the trial. The approach to conducting behavioural observations will need to be piloted in advance of data collection to ensure that these are able to capture the information required (for example, is waste being carried out clearly visible or obscured by carry bags, etc.).

Public and school holidays

The experiment was conducted during a number of public and school holidays, which is likely to have influence the results. Based on the experience of the park managers involved in the experiment and Keep Britain Tidy, visitor numbers to parks tend to increase during holidays, particularly in warmer weather, and this tends to increase the amount of waste taken into and/or disposed of in the parks. Monitoring litter as a proportion of overall waste in the park, as described above, would normally account for this variable.

The holidays that occurred during the monitoring are listed below.

Ealing Council monitoring and holidays dates

Monitoring phase	Ealing Council dates	Public and school holidays
Phase One: Baseline	14 May to 10 June 2018	<ul style="list-style-type: none"> • Spring bank holiday (Mon 28 May) • School holidays (Ealing): Summer Half Term (Mon 28 May to Fri 1 June)
Phase Two: Initial Impact	11 June to 8 July 2018	None
Phase Three: Longer term impact	6 August to 2 September 2018	<ul style="list-style-type: none"> • School holidays (Ealing): Summer (Wed 25 July 2018 to Fri 31 Aug) • Summer bank holiday (Mon 26 Aug)

Merton Council monitoring and holidays dates

Monitoring phase	Merton Council dates	Public and school holidays
Phase One: Baseline	28 May to 24 June 2018	<ul style="list-style-type: none"> • Spring bank holiday (Mon 28 May) • School holidays (Merton): Summer Half Term (Mon 28 May to Fri 1 June)
Phase Two: Initial Impact	25 June to 22 July 2018	None
Phase Three: Longer term impact	20 August to 16 September 2018	<ul style="list-style-type: none"> • School holidays (Merton): Summer (Tues 24 July 2018 to Fri 31 Aug) • Summer bank holiday (Mon 26 Aug)

Summer weather in 2018

In June, July and much of August 2018, London experienced a heatwave, with consistently warm temperatures and sunny weather¹. Again, in the experience of park managers and Keep Britain Tidy, warmer weather tends to increase the number of visitors to parks and thus the amount of waste brought in and/or disposed of there. This is likely to have influenced the results of the experiment across all three parks, although mostly the North Acton Playing Fields and Wandle Park. Due to Maytrees Rest Garden's use as more of a thoroughfare, the results from this park are likely to have been affected to a lesser extent. Again, fluctuations in footfall can normally be accounted for by monitoring litter as a proportion of overall waste in the park.

¹ See the Met Office *2018 weather summaries* for details: <https://www.metoffice.gov.uk/climate/uk/summaries/2018>; and *Heatwave: 2018 was the joint hottest summer for UK*, BBC News, 3 September 2018, available at: <https://www.bbc.co.uk/news/uk-45399134>.

Events and other activity in the parks

During the briefing sessions, the partners were asked to consider and inform us of any events and/or other activities that might occur during the monitoring that could influence the results. The activities reported by the partners were as follows:

- Maytrees Rest Garden – no activities at the site that may have influenced the results
- North Acton Playing Fields – Phase One (Baseline): Cricket, football and café; Phase Two (Immediate impact): Cricket; Phase Three (Longer term impact): Football and café. These activities have not been factored into the analysis described in the following sections, as we consider these activities to be business as usual.
- Wandle Park – Phase One (Baseline): Rough sleepers in the park in the second week of the baseline monitoring phase. This activity had not been factored into the analysis as we consider the influence on the results to be minimal.

METHODS: Data sources and collection

- How did you source or collect the data/information to measure the indicators above?
- For each data source, set out at what points during the project you collected data (and why), and at what locations. Include information on the data you collected before your project began.
- How did you make sure data collection was consistent?
- *Weight of litter (kg) and volume of litter (bag counts) on the ground and in litter bins (during the baseline phase) at the three parks – for three four-week phases - before the bins were removed, immediately after they were removed and again two months after bin removal to identify any longer term impacts.*

Litter data to measure this indicator was collected by the two partner councils and their cleansing contractors. Keep Britain Tidy provided operatives with litter monitoring guidelines, data collection forms, a spreadsheet for inputting data, and two sets of luggage scales per park for weighing waste. Litter on the ground and waste in bins at the site was collected, weighed, and counted (in number of full bags). This was done at every visit to cleanse the site that occurred within each of the three phases of this project. Each phase lasted for four weeks. This included monitoring *before the bins were removed, immediately after they were removed and again two months after bin removal to identify any longer term impacts*. As litter monitoring was carried out by the same street cleansing team for the duration of the trial, this remained consistent throughout the two monitoring months.

Each park submitted their data one week after starting the trial. This was to allow us to check and verify the data as being conducted and recorded correctly.

- *Perception surveys with park users to assess their views on the litter levels and the visual appearance of the parks – again conducted across the three phases*

Perceptions and attitudinal data was collected through 502 perceptions surveys with park users (there was a target of 50 surveys per park per phase). This collected feedback on the park, any changes that respondents felt had occurred recently, and different aspects of the park that may have been impacted by the removal of bins, etc. Surveys took 5 minutes to complete, and were carried out by an experienced market research agency, adhering to the Market Research Society's Code of Conduct, ensuring data collection remained consistent throughout.

- *End of project interviews with the partner councils and their contractors.*

We conducted a 60 minute telephone interview with each partner, their cleansing contractor and relevant park staff. The purpose of this was to gather feedback on the intervention, discuss the results and wider impacts. This enabled us to understand how the intervention impacted the partners on an operational level and understand what advice/guidance they would have for other land managers that may trial bin removal in the future.

OUTCOME: Results and Data Analysis

Please record all the information derived from the project, using appendices if appropriate. As set out in the Monitoring and Evaluation Guidance, please include any assumptions made or qualifications needed.

Measuring 'success' and interpretation of results

For the intervention to be deemed successful, it was intended that the intervention would a) show a reduction in litter, b) show that park user perception of the three parks was not negatively impacted and c) overall feedback from the partners and their contractors was positive and that bin removal was something they would consider trailing again elsewhere in their boroughs. However, the results for each of these evaluation elements do not clearly align and in some cases appear to contradict each other. The litter monitoring found a significant increase in the amount of litter on the ground across all three parks in the first month following bin removal and this increase was sustained in two of the parks in the longer term monitoring conducted two months after bin removal. Yet both partners reported that there had been a visible reduction in litter in the parks following bin removal and based on this, both

were planning to roll out the intervention across other selected parks. This apparent contradiction in results may be due to one limitation of the litter monitoring posed by the nature of the intervention. When piloting interventions to reduce litter, Keep Britain Tidy would normally monitor both litter dropped on the ground and rubbish placed in bins at a site for the full duration of a pilot (baseline through to intervention/post intervention monitoring). This identifies the amount of litter present as a proportion of the overall amount of waste disposed of at the site, and tracks changes to this proportion over time. Monitoring in this way allows for fluctuations in footfall at the site to be accounted for. For example, the number of visitors to a site might increase in warmer weather, school/bank holidays or special events, and increases in visitors tends to increase the amount of waste being disposed of at a site (either in a bin or as litter). Therefore, monitoring litter as a proportion of overall waste provides a more accurate measure of the impact of an intervention.

Unfortunately this approach was not possible in the experiment due to the removal of the bins, meaning the overall amount of waste in the park could not be accurately measured in an efficient manner (i.e. we were unable to monitor the amount of rubbish that visitors took out of the park). It is possible that the reduction in litter perceived by the partners was based on their expectation of the amount of litter that would normally be there, for example during the warmer weather periods and public and school holidays highlighted which are likely to have increased visitors to the park. In this sense, the partner perceptions of litter in the park could be interpreted as their estimation of the amount of litter present as a proportion of the overall amount of waste that would normally be collected in the park. Both partners are experienced park managers and as such, Keep Britain Tidy considers their observations of impact to be reliable sources of information.

The park user surveys again had mixed results with regards to perceptions of litter and fly-tipping in the park, however these were more in line with litter monitoring results than the partner observations of impact:

- In Maytrees Rest Garden, the overall results suggest that park user perceptions were not negatively impacted by the bin removal in the longer term, and in fact perceptions of litter and fly-tipping in the park appear to have improved. The perceived cleanliness of the park declined slightly in the first month following bin removal (based on the average scale rating provided by respondents for the park's cleanliness, in which '1' was very poor and '10' was excellent), however this returned to the baseline level in the Phase Three monitoring conducted two months later (Figure 1). Perceptions of the attractiveness of the park remained relatively stable across all three monitoring periods (Figure 1). Respondents in the Phase Two survey were more likely to consider litter to be a problem in the park compared to those in the baseline survey, however this improved to almost baseline levels in Phase Three. Perceptions of fly-tipping in the park improved significantly in both Phase Two and Phase Three surveys compared to the baseline survey (Figure 4). In the Phase Two and Phase Three surveys, respondents were asked whether they felt that litter and fly-tipping levels in the park had 'increased', 'stayed the same' or 'decreased' over the last few weeks without bins in the park. Positively, for both litter and, to a greater extent, fly-tipping, the majority of survey respondents reported that levels had either 'decreased' or 'stayed the same', with this majority increasing in Phase Three (Figure 7).

- In the North Acton Playing Fields, the results suggest that park users felt that litter was more of an issue in the park in the longer term monitoring (Phase Three), however this does not appear to have affected their overall enjoyment of the park. The perceived cleanliness and attractiveness of the park remained fairly consistent across all three monitoring periods (Figure 2). Perceptions of litter and fly-tipping in the park improved in the first month following bin removal when compared to the baseline survey results. However, respondents to the Phase Three survey indicated that litter was perceived to be more of a problem in the park in the longer term when compared to the baseline (perceptions of fly-tipping in Phase Three were in line with or an improvement on those in the baseline survey) (see figures 5 and 8).
- Finally, in Wandle Park, the results suggest that park users' perceptions were negatively impacted by the bin removal. There was a slight and then significant decline in the average ratings provided by respondents for the appearance and cleanliness of the park in the Phase Two and Phase Three surveys respectively when compared to the baseline survey (Figure 3). Perceptions of litter and fly-tipping as a problem in the park were significantly worse following bin removal, particularly general litter, bagged dog poo and picnic litter (Figure 6). When asked about changes to litter and fly-tipping levels over the previous few weeks without bins in the park, respondents were generally more likely to say that litter had 'stayed the same' in the first month following bin removal, excluding 'general litter' which was seen to have increased, however this proportion fell significantly in the longer term monitoring, in which respondents were more likely to say that litter and household fly-tipping had increased (Figure 9).

Positively, across all three parks and all three phases of monitoring, the overwhelming majority of respondents said that without bins in the park, they would take their rubbish home with them (Table 5).

It is important to consider public perceptions of litter, as research by Keep Britain Tidy and others has found that people are more likely to litter and fly-tip where these issues are already present². However, we suggest that in this instance, the partner perceptions of impact are a more appropriate indication of success. As experienced park managers, the partners had a good understanding of how much overall waste could normally be expected in the park during the monitoring periods (e.g. during warmer weather and school holidays). The discrepancy in results may also be due to differences between the park

² *Understanding and Tackling Fly-tipping in London*, Keep Britain Tidy (2018), <http://www.keepbritaintidy.org/sites/default/files/resources/Understanding-and-Tackling-Fly-Tipping-in-London-Final-Report.pdf>; 'Beacons of litter: A social experiment to understand how the presence of certain littered items influences rates of littering', *Journal of Litter and Environmental Quality*, vol. 1, no. 1 (2017), http://www.keepbritaintidy.org/sites/default/files/resource/KBT_Journal_of_Litter_and_Environmental_Quality_June2017.PDF.

manager and park users in what constitutes litter and fly-tipping. For example, Keep Britain Tidy’s previous research has found that members of the public are less likely to see bags of rubbish placed next to bins as fly-tipping³. As such, these issues may not have been considered as ‘problematic’ by park users in the baseline survey and subsequent surveys when asked to rate the extent of the issue in the park. Conversely, these issues are likely to have factored in the park managers overall assessment of impact.

The results for each experiment objective are detailed below.

Litter monitoring results (Experiment Objective 1: To identify the impact of the intervention on litter levels in the park)

Overall, the litter monitoring results indicate that all three parks experienced an increase in litter on the ground (by weight) to varying degrees in the month following bin removal.

Of the three parks, Maytrees Rest Garden in Ealing experienced the smallest increase in litter, with the average weekly weight of litter collected from the park increasing by 21% in the first month following bin removal. However, in the third month of monitoring after bin removal (Phase Three), litter levels appear to have almost returned to pre-bin removal levels (Table 1).

Table 1: Litter monitoring results – Maytrees Rest Garden, Ealing

Monitoring phase	Average weight of litter collected per week over four weeks (kg)	% change from baseline
Phase One: Baseline	17.6	-
Phase Two: Initial impact	21.2	+21%
Phase Three: Longer-term impact	17.7	+1% (-16% from Phase 2)

³ *Understanding and Tackling Fly-tipping in London*, Keep Britain Tidy (2018), <http://www.KeepBritainTidy.org/sites/default/files/resources/Understanding-and-Tackling-Fly-Tipping-in-London-Final-Report.pdf>.

The North Acton Playing Fields in Ealing experienced a significant increase in the amount of litter in the park in the month following bin removal, and this increased further during the third month following bin removal (Phase Three monitoring) (Table 2).

Table 2: Litter monitoring results – North Acton Playing Fields, Ealing

Monitoring phase	Average weight of litter collected per week over four weeks (kg)	% change from baseline
Phase One: Baseline	37.0	-
Phase Two: Initial impact	88.8	+140%
Phase Three: Longer-term impact	101.0	+173% (+14% from Phase 2)

Wandle Park in Merton recorded the biggest increase in litter levels of the three parks in the first month following bin removal, however litter levels appear to have decreased from this in the third month following bin removal (Table 3).

Table 3: Litter monitoring results – Wandle Park, Merton

Monitoring phase	Average weight of litter collected per week over four weeks (kg)	% change from baseline
Phase One: Baseline	11.5	-
Phase Two: Initial impact	58.7	+411%
Phase Three: Longer-term impact	49.6	+332% (-15% from Phase 2)

Despite this, in the partner interviews conducted after the experiment, both Ealing Council and Merton Council felt that there had been a visible reduction in the amount of litter in their parks following the bin removal. Both partners also felt that fly-tipping in the parks had decreased following the bin removal, particularly at locations where bins had been and where local residents had previously been dumping household waste:

“It worked – it litter reduced significantly... There was no increase in fly-tipping or side waste⁴.”

“Visually it looked good, because where there were bins before, there was often litter around them, and so it took away that eyesore.”

“As a [partner] we are incredibly happy. We inspected the park three times a week and we could see that it was cleaner.”

“We picked the park [for the experiment] because we knew that there were bins that were being abused by local residents – they were using these for domestic waste. So we knew we would probably have a reduction in fly-tipping as a result of the bin removal [...] We did see bags of household rubbish dumped near the entrance in the first week, but then this stopped.”

(Partner interviewees)

Across all three parks, the overall amount of waste collected from the parks (from bins in Phase One only, and the litter collected from on the ground) decreased significantly (Table 4). This indicates that once the bins were removed, a significant amount of waste that would normally be placed in bins by visitors to each park was instead taken elsewhere.

⁴ ‘Side waste’ refers to household waste which has been left without authorisation next to a rubbish bin for collection. The term is normally used in relation to people leaving excess waste next to their household rubbish bins on collection day, however in this instance the term is used to describe waste left by public bins.

Table 4: Total amount of waste collected in parks (average weekly kgs)

	Maytrees Rest Garden, Ealing	% change in amount of total waste in park	North Acton Playing Fields, Ealing	% change in amount of total waste in park	Wandle Park, Merton	% change in amount of total waste in park
Phase One: Baseline	110.1 (of which 8% litter)	-	234.5 (of which 16% litter)	-	143.2 (of which 16% litter)	-
Phase Two: Initial impact	21.2	-81%	88.8	-62%	58.7	-59%
Phase Three: Longer-term impact	17.7	-84%	101.0	-57%	49.6	-65%

For Ealing Council, this reduction in overall waste meant that Council operatives spent less time on cleaning the park, meaning they could “visit more sites in their rounds”.

“[Operatives] haven’t had to pick up more litter. It’s reduced the time they’re spending in the park. In North Acton [Playing Fields], not having to empty eleven bins and not having to litter pick the site and collect side waste, it’s has meant they can get around it quicker. Which is a huge saving for the Council and there will cost savings for the [waste] contractor, as they get charged on waste disposal by tonnage.”

Conversely, Merton Council, which uses a waste contractor for litter and waste management in Wandle Park, felt that any cost savings achieved from reduced waste disposal costs would be balanced by the additional time required to conduct litter picks in the park:

“[The waste contractor] did say that it took a lot longer to litter pick the park, because when people were dumping rubbish before, they were dumping it around the bins, so it was just as easy to collect it, whereas they felt that now they had to go further in and around the park, which took more time.”

“You’d get savings from less tonnage in terms of disposal costs, but this would be balanced by the resource [time] required to pick up litter. So there wouldn’t be much of a saving.”

At the beginning of this experiment, Keep Britain Tidy and the partners were interested to see whether the removal of bins in the parks would prompt visitor to use nearby bins instead, leading to an increase in the amount of waste being put into bins in the streets surrounding the parks. Based on the observations on the partners, it appears that this did not occur:

“We thought people would take their litter to the nearest street bin, but they didn’t.”

“The street bins didn’t seem to suffer as a result of this trial. There is a cut through, through the park, to the tube station. It’s a well-used thoroughfare, but there was no impact on bins in the street [...] There were no reports of litter on streets, the nearest street bins weren’t hammered.”

(Partner interviewees)

Park user survey results (Experiment Objective 2: To identify the impact of the intervention on park user perceptions of the parks and how they are managed)

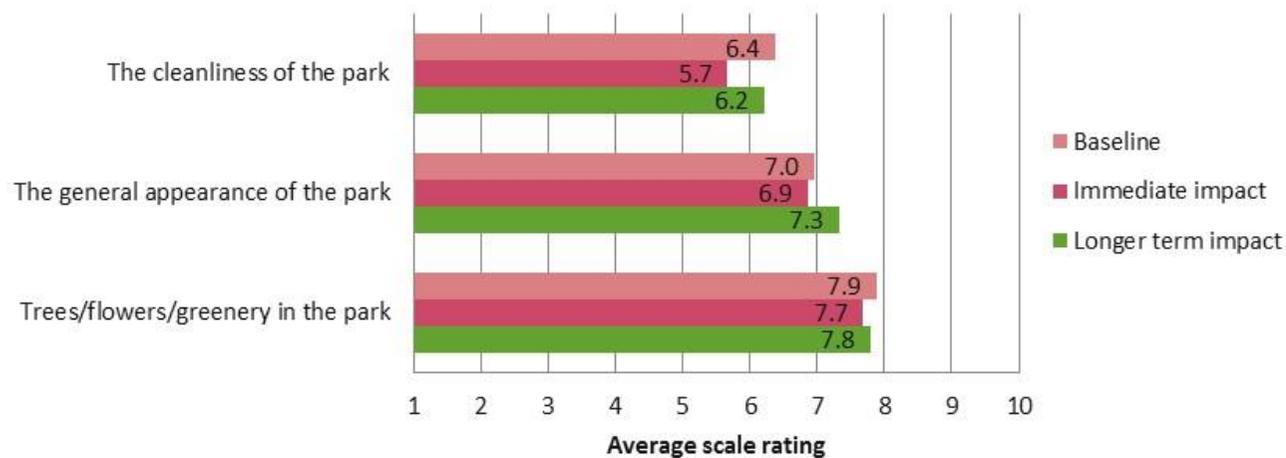
Perceptions of park cleanliness and attractiveness

In each monitoring phase (baseline, ‘immediate impact’ and ‘longer term impact’), park user survey respondents were asked to rate the cleanliness and general appearance of the park on a scale of one (very poor) to ten (excellent). Alongside this, respondents were asked to rate the quality of trees/flowers/greenery in the park to provide a benchmark for assessing any changes to the perceived cleanliness and appearance of the park over the three monitoring period.

Overall, this had mixed results. In Maytrees Rest Garden there was a slight decline in average cleanliness rating provided by respondents, however this average increased when the survey was repeated two months later, indicating that perceptions of cleanliness had improved – almost in line with the baseline figure (Figure 1).

Figure 1: Park user perceptions of the cleanliness of Maytrees Rest Garden, Ealing

**Average rating by respondents: Maytrees Rest Garden, Ealing
(1 = Very poor; 10 = Excellent)**



Base: Baseline = 53; Immediate impact = 48; Longer term impact = 52.

In the North Acton Playing Fields, the average rating provided by respondents for the cleanliness of the park remained fairly consistent across all three monitoring periods (Figure 2).

Figure 2: Park user perceptions of the cleanliness of North Action Playing Fields, Ealing
Average rating by respondents: North Acton Playing Fields, Ealing
(1 = Very poor; 10 = Excellent)



Base: Baseline = 64; Immediate impact = 67; Longer term impact = 51.

Conversely, the perceived cleanliness of Wandle Park appears to have worsened following bin removal, with a significant drop in the average cleanliness rating provided by respondents in the survey conducted two months after bin removal (Figure 3). This finding does not reflect the observations of the partner, who felt that the park had visibly less litter following bin removal. The research did not identify the reason for the discrepancy. However, the partner felt that this was due to a disconnect between perceived and actual levels of litter, which may be linked to preconceived ideas around less bins meaning more litter.

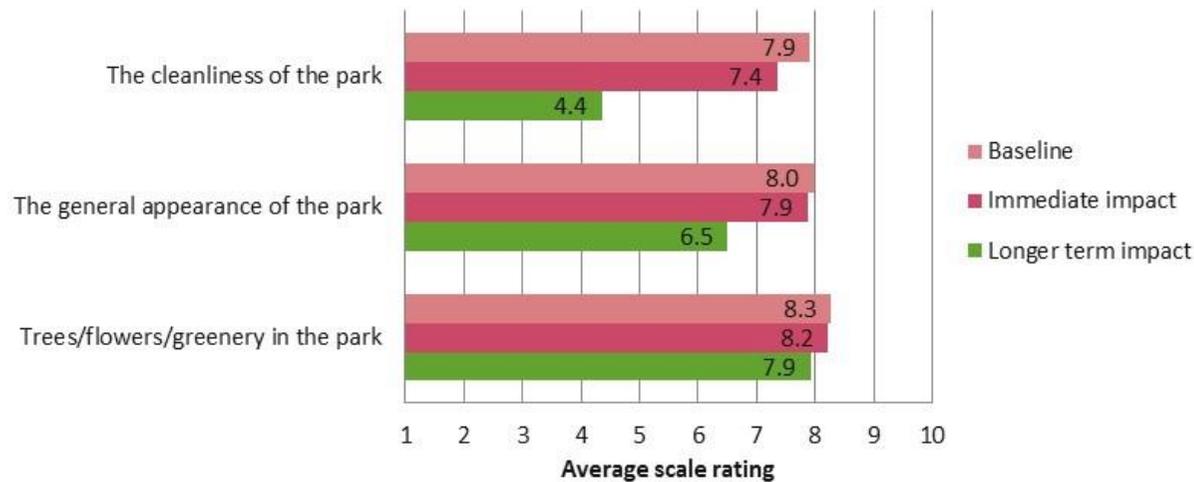
“We have to be careful about perceptions and what they’re based on [...] Perceptions and the actual amount of litter aren’t the same thing and we have to break down the legacy of that, but the evidence of our own eyes and photography shows that it worked. I never saw a bad picture from the whole summer, and given the summer we had...”

“Every single person who I spoke to in the park who complained about the bins – when I explained that there was less litter, they understood it.”

“[Before the bin removal] There used to be cans and other litter all over the bench and when I pointed that out [to park users], people started to get it.”

Figure 3: Park user perceptions of the cleanliness of Wandle Park, Merton

**Average rating by respondents: Wandle Park, Merton
(1 = Very poor; 10 = Excellent)**



Base: Baseline = 58; Immediate impact = 48; Longer term impact = 61.

Perceptions of litter issues in the park

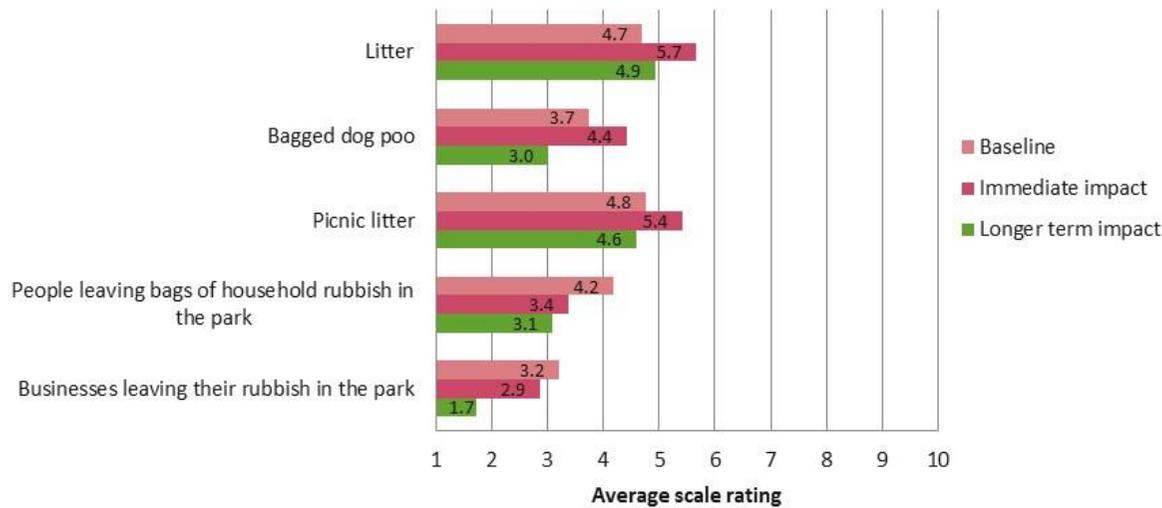
In each of the three monitoring periods, respondents were asked to rate how much of a problem specific litter issues were in the park on a scale of one (not at all a problem) to ten (a major problem). The results are shown in figures 4-6 below.

Of the three parks, Maytrees Rest Garden had the most positive results, with bags of household rubbish and business rubbish being seen as less of a problem following bin removal (Figure 4). In this park, perceptions of general litter, picnic litter and bagged dog poo being a problem worsened on average in the monitoring conducted in the month following bin removal, however perceptions of these issues appear to have improved significantly in the survey conducted two months later.

The results in Wandle Mark, Merton, were again less positive, with most litter issues being rated significantly more problematic in the park on average in the survey conducted two months after bin removal when compared to the baseline (Figure 6).

Figure 4: Perceived presence of litter issues in the park: Maytrees Rest Garden, Ealing

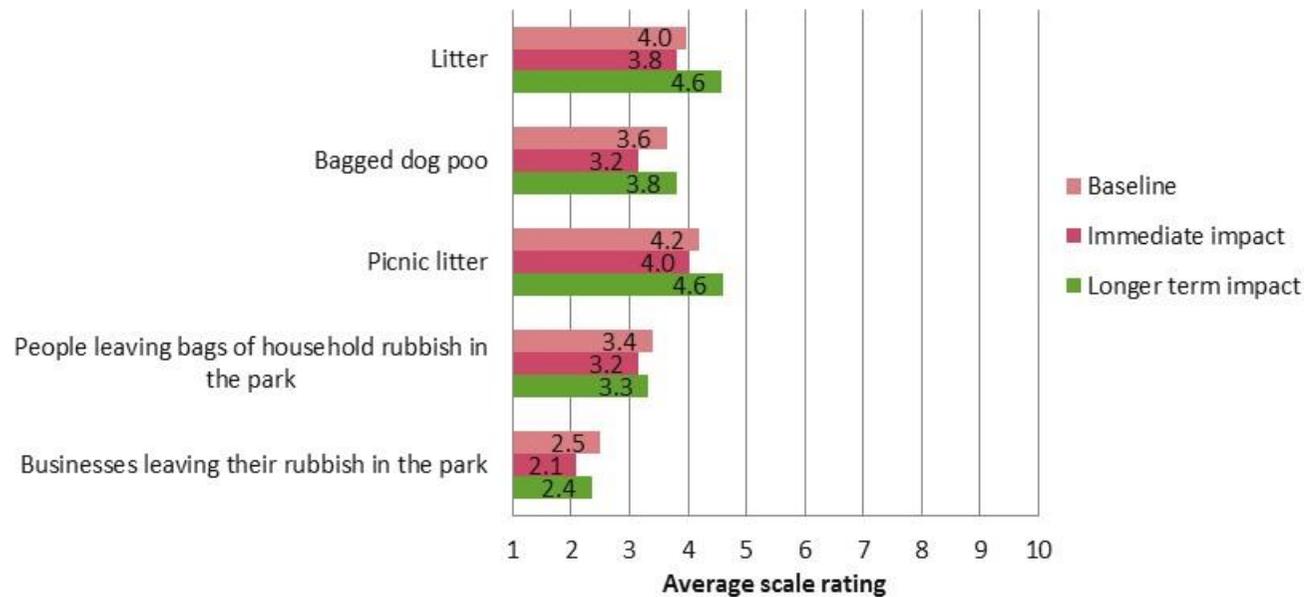
Perceived presence of litter issues: Maytrees Rest Garden, Ealing
 (1 = Not at all a problem in the park; 10 = A major problem in the park)



Base: Baseline = 53; Immediate impact = 48; Longer term impact = 52.

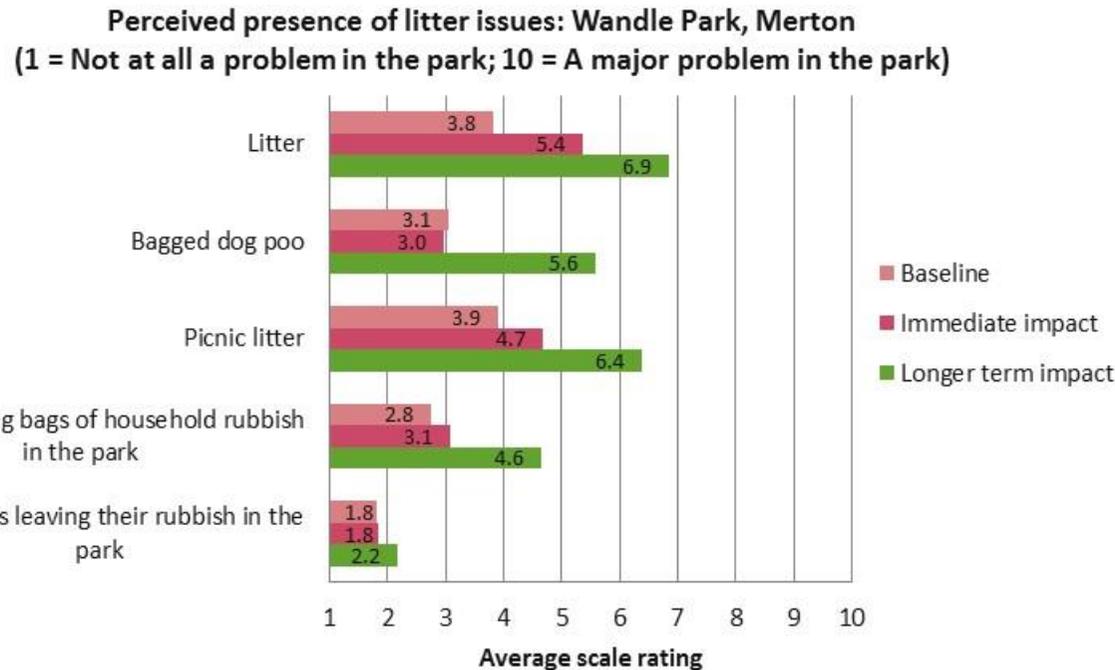
Figure 5: Perceived presence of litter issues in the park: North Acton Playing Fields, Ealing

Perceived presence of litter issues: North Acton Playing Fields, Ealing
 (1 = Not at all a problem in the park; 10 = A major problem in the park)



Base: Baseline = 64; Immediate impact = 67; Longer term impact = 51.

Figure 6: Perceived presence of litter issues in the park: Wandle Park, Merton



Base: Baseline = 58; Immediate impact = 48; Longer term impact = 61.

Response from park users to the bin removal

Prior to the bin removal, no communications from the partners or Keep Britain Tidy took place that would alert park users and other members of the community to the experiment. The purpose of this was to test the impacts of bin removal without alerting anyone to the fact and thus potentially influencing their perceptions and behaviour.

Both partners in the experiment received a number of complaints from park users for two of the parks, North Acton Playing Fields (Ealing) and Wandle Park (Merton), in the first weeks following the bin removal. These two parks appear to be popular recreation destinations for local residents and dog walkers who use the park regularly. On average, survey respondents said that they spend 78 minutes in North Acton Playing Fields⁵ and 69 minutes in Wandle Park⁶ when visiting. In contrast, Maytrees Rest Garden, which received only one complaint from the public following bin removal, is considered more of a thoroughfare than a recreation destination, according to the partner, although it is used by local employees during breaks and young families. This park does not have an active residents group attached to it. On average, survey respondents in this park said that they spend 22.5 minutes in the park when visiting.

The North Action Playing Fields perhaps generated the ‘loudest’ and most sustained protests from park users. This park has an active local residents association attached to it and is popular with dog walkers. According to the partner, some regular dog walkers in particular were incensed at the bin removal and protested by leaving bagged dog waste in piles where bins had previously been located, rather than taking these with them out of the park.

“Dog walkers – they were putting dog poo where the bins were, on a square pad where the bin used to be on the path. In the first two weeks it was the dog walkers [complaining] [...] it cooled down after a few weeks following the initial shock.”

“Once people enquired [about the removed bins] and we used the ‘lines to take’ document, people were positive once they knew what the aim was, and wished [us] luck.”

Wandle Park in Merton similarly received several complaints, however the partner felt that these came from a relatively small number of people and that they started to diminish after the first week following bin removal.

“In the first week there was uproar and protest, but after that it died down.”

⁵ Base: Phase 1-3 survey respondents = 182.

⁶ Base: Phase 1-3 survey respondents = 167.

“It seemed to be only a handful of residents making a big noise.”

The partner observed that in at least one instance, park users responded to the bin removal by taking on responsibility for litter dropped by others in the park:

“We started with an inspection one week and there was a grandma going around with her grandchildren and a bag with her, collecting rubbish – she then took it home. Some people took responsibility for it.”

This partner felt that ultimately, park users will come to see the overall amenity of the park as improved without bins in place, due to overflowing bins generating the most complaints from park users:

“But it’s actually about people’s perception – if they’re not seeing overflowing bins, I will assume that they’ll be a lot happier with their park, because that’s one of the things that they write to us about. They really struggle to understand why a local authority would let the bins get to this state. I think it’s a legacy of the park people and warden, where every park used to have its own army of people looking after it – it’s the older people who have these perceptions because they remember what it used to be like.”

Perceptions of the concept of removing bins to prevent litter

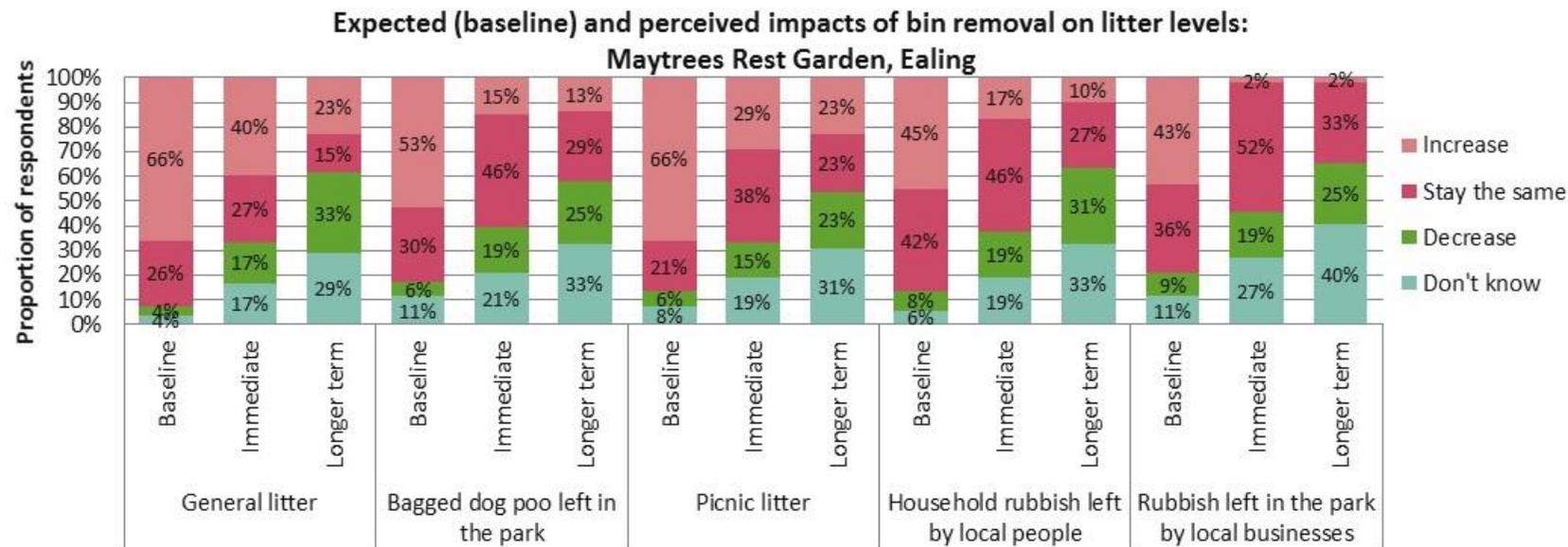
In the baseline park user perceptions survey, respondents were asked to imagine that there were no bins in the park and asked whether they thought litter levels would increase, decrease or stay the same. In the subsequent (immediate impact and longer term impact) surveys, park users were told that there were no bins in the park and asked whether they thought litter levels had increased, decreased or stayed the same over the past few weeks without the bins in place. The results for each park are shown in figures 7-9 below. Across all three park, respondents generally more positive about the different litter impacts of bin removal once the bins had actually been removed, although this was significantly more so in Maytrees Rest Garden. These results reflect internal feedback gathered by partners, for example:

“One of the councillors who was sceptical about the experiment emailed me about halfway through to say how clean and lovely the park looked – he was really chuffed.”

“Our colleagues thought it was going to fail – five colleagues said they will eat their words. It’s made colleagues rethink the way we use bins, it changes morale and enthusiasm... it’s a real game changer, it has really changed people’s opinions.”

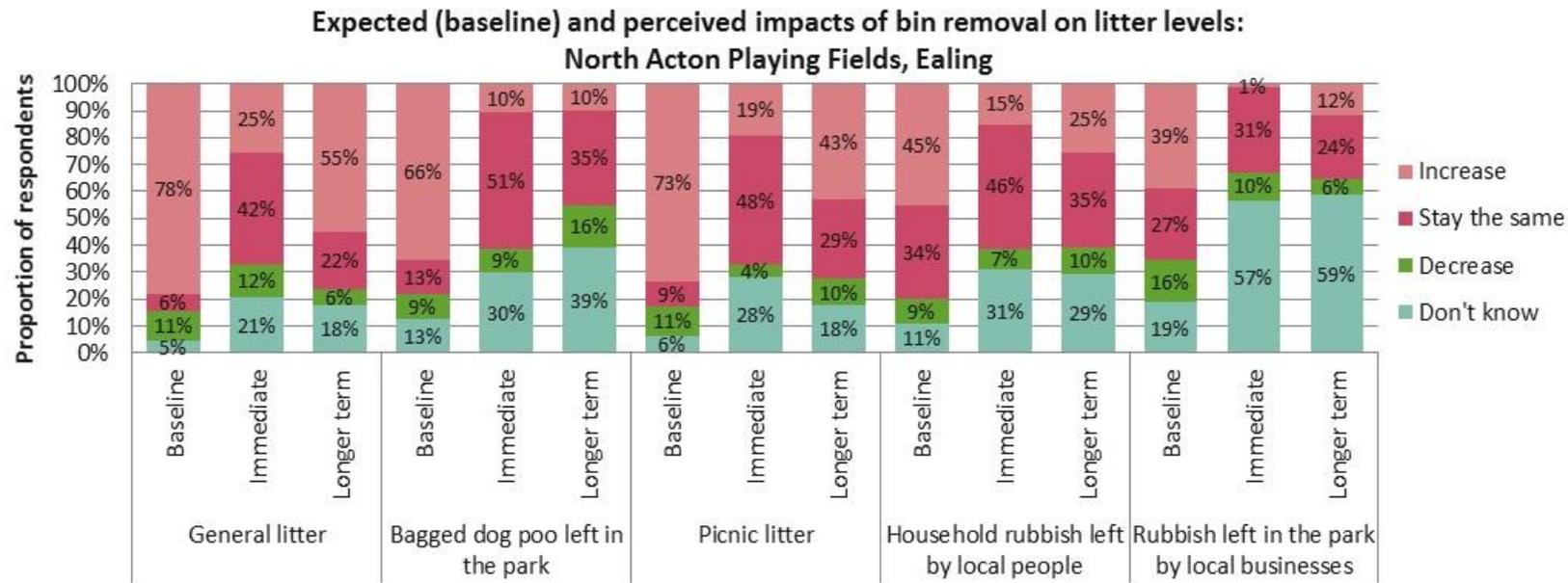
Despite this, the longer term monitoring results were less positive for certain litter issues in two of the parks. In North Acton Playing Fields, respondents were more likely to say that litter levels had stayed the same in the period immediately following bin removal, through for some litter types this proportion decreased by the third phase of monitoring (longer term impact) as the proportion of respondents who said that litter levels had increased rose again. Similarly, in Wandle Park, there was an increase in the proportion of respondents who felt that litter levels had ‘stayed the same’ in the month immediately following bin removal, but this fell significantly in the longer term monitoring when there was a greater proportion of respondents who felt litter and household fly-tipping had increased. Interestingly, respondents in North Action Playing Fields indicated that levels of bagged dog poo litter decreased following the bin removal, despite the piles of bagged dog poo left by park users in protest.

Figure 7: Expected (baseline) and perceived impacts of bin removal on litter levels: Maytrees Rest Garden, Ealing



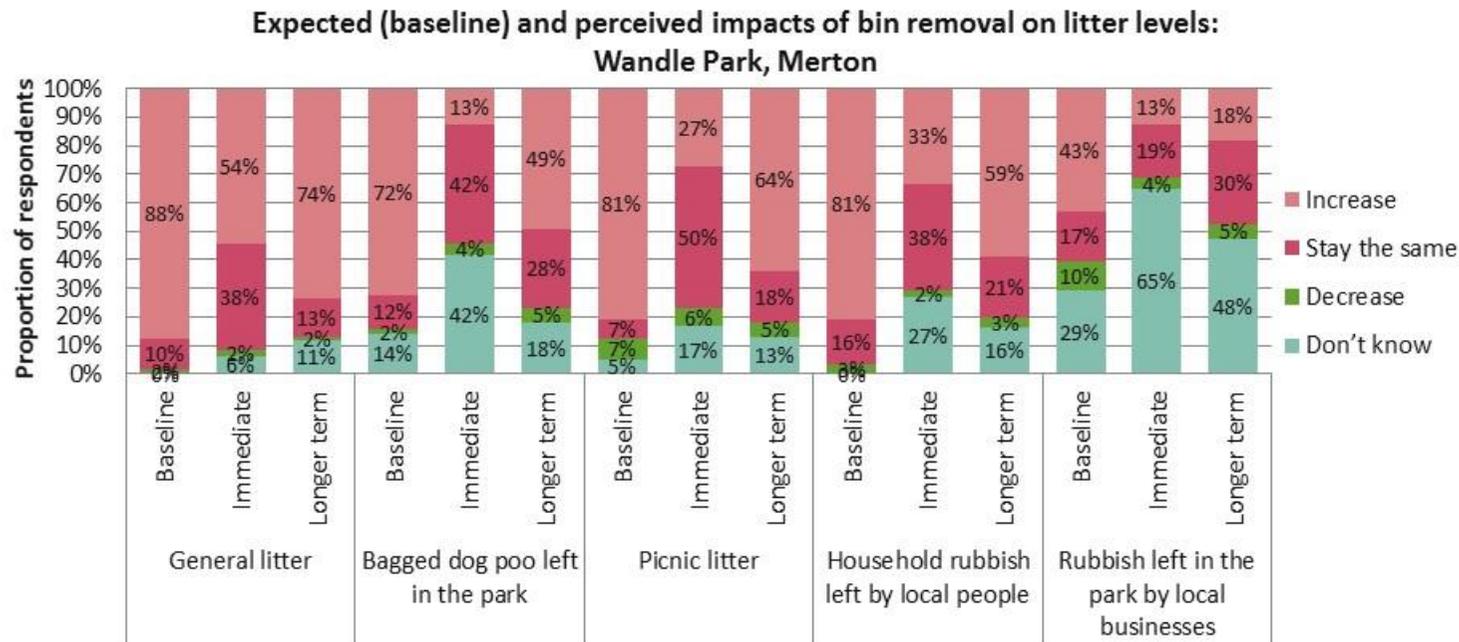
Base: Baseline = 53; Immediate impact = 48; Longer term impact = 52.

Figure 8: Expected (baseline) and perceived impacts of bin removal on litter levels: North Acton Playing Fields, Ealing



Base: Baseline = 64; Immediate impact = 67; Longer term impact = 51.

Figure 9: Expected (baseline) and perceived impacts of bin removal on litter levels: Wandle Park, Merton



Base: Baseline = 58; Immediate impact = 48; Longer term impact = 61.

Claimed behaviours and attitudes when no bins are provided in parks

In the baseline survey, park user respondents across the three parks were asked what they would do with their rubbish if there were no bin in the park. Respondents in the subsequent (immediate impact and longer terms impact) surveys were similarly asked what they did with their rubbish now that there were no bins in the park. As shown in Table 5 below, in each survey period the overwhelming majority of respondents said that they would take their rubbish home, while a smaller proportion said that they would find a bin outside the park. Positively, the proportion of respondents who said that they would leave their rubbish somewhere where it could be easily collected by park operatives decreased significantly following the removal of the bins.

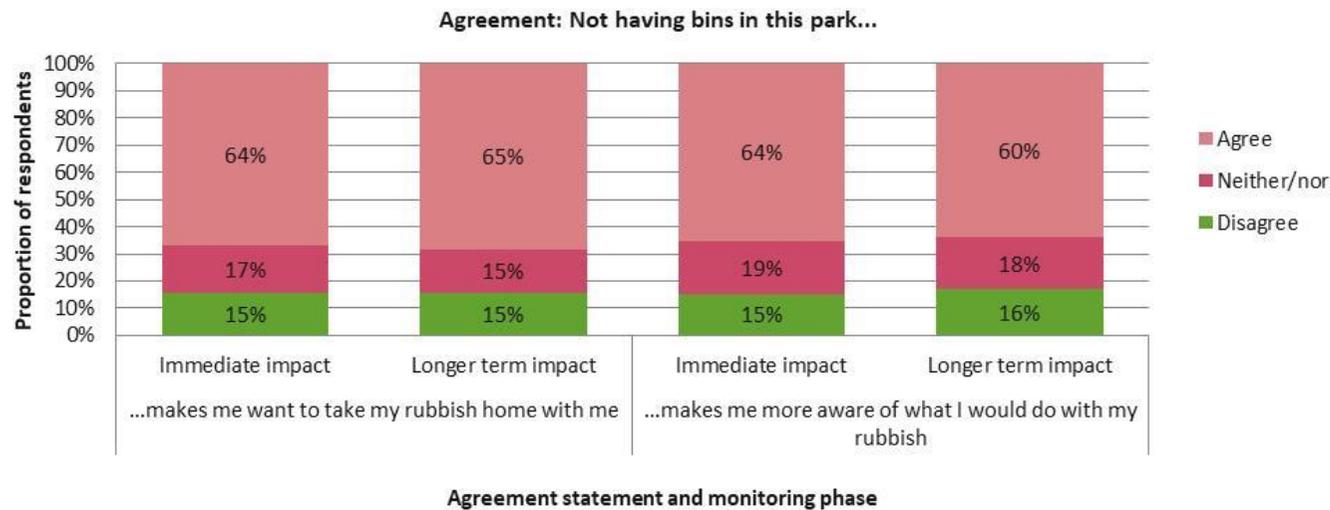
Table 5: Claimed behaviours when no bins are in the park

	Baseline	Immediate impact	Longer term impact
Take your rubbish home with you	71%	71%	74%
Find a bin outside the park when you leave	45%	36%	40%
Place your rubbish somewhere where it can be easily picked up by rangers/cleansing operatives	17%	10%	11%
Place your rubbish somewhere discreet in the park, e.g. behind a tree, under a bench, in a corner	8%	6%	5%
Add your rubbish to other items that people have already left in the park	5%	1%	3%
Drop/leave it when you are finished with it	2%	2%	2%
None of the above	2%	1%	1%

Base: Baseline = 175; Immediate impact = 163; Longer term impact 164.

In the two surveys conducted after the removal of the bins (immediate impact and longer term impact), respondents were asked to what extent they agreed that not having bins in the park made them more aware of what they did with their rubbish and made them want to take their rubbish home. As shown in Figure 10 below, responses were overwhelmingly positive, with most respondents indicating that they would want to take their rubbish with them.

Figure 10: Claimed attitudes towards not having bins in the park



Base: Immediate impact = 163; Longer term impact 164; graph exclude 'don't know' responses, however these are accounted for in the percentage figures.

Experiment Objective 3: To identify recommendations for land managers with regards to using the bin removal approach to reduce litter

Overall, both partners felt that the bin removal was a success and planned to continue to roll out the trial in other selected parks. The partner interviewees from Ealing Council had reinstated four of the original 11 bins at North Acton Playing Fields following the experiment, but planned to continue with having no bins at Maytrees Rest Garden. The interviewees said that they were now looking at other area where they could remove bins. The Merton Council interviewees were considering reinstating one or two bins at Wandle Park, including at the playground, and were also looking at other locations where they could remove bins altogether.

“I’m a firm believer that the presence of bins encourages people to leave litter behind. [...] I am absolutely convinced that removing bins changes people’s behaviour.”

“Very pleased it happened and very enthused about the outcome – we certainly have an appetite to extend the trial.”

The main advice that the partners had for others considering bin removal related to selecting appropriate parks for the approach and communicating with stakeholders in advance, as outlined below.

Selecting parks for bin removal

Both partners felt that certain types of parks are more appropriate for the approach than others, and advised land managers to consider this when selecting parks for bin removal. Specifically, parks that are heavily used by dog walkers were seen as less appropriate for the approach due to dog walkers needing to dispose of bagged dog waste. Parks that tend to have high rates of household fly-tipping were seen as good options for bin removal, particularly where this occurs around litter bins.

“We want to roll [bin removal] it out, but will probably take a softly-softly approach. We probably won’t target parks with a lot of dog walkers, for example. We want to keep the residents on side, so we will think about which parks are appropriate.”

“My advice [to other land managers] would be a softly-softly approach, somewhere where you think you’ll get a reasonable result. This park [chosen for the experiment] is central, it’s well used, and it did have an issue with fly-tipping and litter. We knew that a lot of the fly-tipping around the bins is caused by local residents so we knew that taking them away would have an impact on that. So that’s why we chose it and that’s probably a good way to start it off.”

At the same time, partners felt that land managers needed to be willing to be bold about trialling the approach in parks that do have issues with litter and fly-tipping, even where this may seem counter-intuitive, as they felt that the removal did have an impact on these issues:

“[Other park managers] shouldn’t be scared of taking the risk, the fact that it was a shock actually did help, in people changing their tune very quickly. We feel the risk has paid off.”

Communicating with key stakeholders

As previously mentioned, for the purposes of this experiment, Keep Britain Tidy instructed both partners not to publicise the intervention so as not to influence the results. Both partners felt that future iterations of the intervention would benefit from a greater level of engagement with key stakeholders in advance to explain the purposes of the intervention and help to alleviate concerns about its potential impacts. In this way, the bin removal would not come as such a shock to residents and elected members.

“Maybe we should have engaged with a few key people in advance. We did engage our customer service team. But it may have been easier for us if we did engage a few other key people, like the elected members and the residents groups.”

“The only thing that could be improved is engaging with dog walkers beforehand.”

Both partners found the ‘lines to take’ document provided by Keep Britain Tidy to be very useful for responding to internal and external enquired. This document provided a series of expected ‘frequently asked questions’ and recommended responses. The partners provided these to customer service staff to assist them in responding to enquiries from the public. One partner felt that it would be beneficial to add to this a clear rationale for choosing specific parks for bin removal. For example, the park may have issues with fly-tipping or picnic litter that makes it particularly appropriate for the intervention.

“We picked a location and we probably got beat up by a few residents as to why we chose that specific park. So my advice to others would be to have a clear rationale as to why you have picked that particular park.”

Conducting pilots to prevent litter in parks

The partners felt that the overall design of the experiment worked well and that the Defra Litter Innovation Fund provided an opportunity to conduct an innovative and potentially controversial experiment using a methodological approach with the backing of having Keep Britain Tidy and another partner on board.

“The fact that it was being done properly [worked well], that it was part of a national project and the Keep Britain Tidy brand.”

However one partner felt that a larger sample size of parks would have benefited the experiment to increase its robustness:

“The sample size is a bit small so we are definitely interested in further testing. One site probably won’t stand up politically.”

Having a project brief for the experiment alongside monitoring forms and guidelines were highlighted as being useful by the partners, particularly as these could be shared with key stakeholders such as the waste contractor. However partners were split on the timings of the experiment. One partner felt that running the experiment over the spring and summer meant that it was not conducted under normal conditions due to public and school holidays, which are likely to have increased the number of visitors to the parks:

“If you want to test something on litter, do it earlier than the spring. In the spring and summer, you have all those bank holiday weekends and that affects the results – there are more people around and more litter. Maybe start in January.”

Conversely, the other partner felt that this meant that:

“Summer time was the perfect time to do it, peak season, started before the summer holidays, good weather the entire stretch, very consistent. Perfect timing.”

In light of the issues highlighted at the beginning of this section, Britain Tidy recommends that future trials of the approach use behavioural observations to monitor the amount of waste taken into the park that is then taken out again. This will help to identify and track the amount of litter in the park as a proportion of overall waste once the bins have been removed, which would be useful for accounting for fluctuations in visitor numbers during public and school holidays, and warmer periods.

Impacts and Evaluation - What did you learn?

- What were the outcomes against your indicators, and were they as expected? Please provide details of immediate, intermediate and long term impacts. Can you demonstrate that the outcomes would have been different if intervention had not taken place? Did any negative consequences arise? Which interventions, or aspects of your intervention, were particularly effective, and why?
- If outcomes/impacts were not as expected, it's useful to know why. Did you identify what factor(s) contributed to the project not working as intended?

Overall, the results from this experiment are inconclusive and we cannot confidently say that the removal of bins from a park or green space will have a positive or negative impact on litter levels. Nonetheless, based on the positive feedback from partners, the significant reductions in the overall amount of waste being left in the parks by visitors from the baseline to intervention monitoring periods, and positive self-reported waste disposal behaviours by park users), we believe that further trialling of bin removal is worthwhile.

As noted above, the key reason that the results from this experiment are inconclusive is that the amount of waste taken into the parks was not adequately monitored once the bins were removed (Keep Britain Tidy would normally monitor both litter left of the ground and waste left in bins to identify the total amount of waste taken into and left in the parks, but this was not possible once the bins were removed). Measuring in this way allows us to account for seasonal changes, special events and warmer weather periods which may influence the number of visitors to the park, and the amounts and types of waste they bring in.

With this in mind, we strongly recommend that future iterations of the experiment include a means for robustly measuring footfall in the parks for the duration of the experiment. Sensor-based footfall counters placed at park entrances or on main pathways are useful tools for this and can be hired via research and survey agencies. It should be noted, however, that higher footfall through a park does not always mean that more waste is being brought in. For example, a running event might bring increased footfall to a park, but participants might not necessarily bring much waste into the park with them. Therefore, researchers should take note of any special events or circumstances that take place during the monitoring periods that may influence the results in this way. Moreover, we suggest that footfall monitoring be supplemented by behavioural observations and/or short intercept interviews to capture the amount and types of waste that visitors take into and out of the park during both the baseline and intervention monitoring periods.

Where budget allows, control sites could also be considered for future iterations of the experiment, whereby a selection of sites are monitored alongside the intervention sites without any intervention actually taking place. The indicators monitored (i.e. litter/waste and park user perceptions) should be exactly the same as those monitored at the target sites, and should be conducted over the same time periods (including baseline monitoring). There should be at least one control site per target site, as monitoring multiple locations will help to discount other variables that may influence results (i.e. influences

beyond the control of the project).

What would you do differently?

- What, if anything, would you do differently if you ran a similar project again?
- If outcomes/impacts were not as expected, do you think the factor(s) you identified as contributing to the project not working as intended could be overcome were the project repeated, and if so, how?
- What advice would you give to anyone else running this type of intervention?

As highlighted above, there are two key learnings from the experiment that Keep Britain Tidy would do differently in future:

- 1) We would include footfall monitoring alongside behavioural observations and/or short intercept interviews to capture the amount and types of waste that visitors take into and out of the park.
- 2) We would engage key stakeholders in advance of the experiment to explain the purpose of the experiment and get their buy-in to the initiative.

Our recommendations for further trialling of the approach are outlined under *Next Steps* below.

What did it cost

Please provide details of your full project costs and contributions in kind (regardless of source), to enable others to understand the funding required to replicate your intervention. This could also include resource cost. Remember to include the costs of monitoring and evaluation. Be specific.

All project costs are outlined below.

20.75 days of staff time for:

- Set up, project management and quality assurance
- Parks for London support with project (inc. assistance with partner recruitment)
- Develop monitoring tools (partner interview, litter monitoring guidance, perception survey)
- Carry out partner briefing session and sessions with parks monitoring staff
- Set up and management of perceptions surveys with agency

- Local authority support (12 weeks monitoring, attend briefing sessions, project planning)
 - Data analysis, evaluation and reporting
- £7,332 (excl. VAT)

Direct costs for (note that these would increase with the addition of recommended behavioural observations intercept interviews in future trials):
Park user perceptions surveys (50 surveys x 3 sites x 3 phases)
£4,025 (excl. VAT where applicable)

11.5 days of local authority support for:

- Project briefing, set up, site selection
- Bin removal
- Monitoring and data entry
- Partner interview
- Final checks
- Parks for London event – sharing results

Approx. £2,611 (in-kind match funding)

Next Steps

Based on what you have learned:

- How are you planning to build on the activity yourselves?
- If the project was successful, how could/should this intervention be replicated and/or scaled up by you or others?
- If the project was not successful, how might it be changed to potentially deliver better results?
- What further research or refinement is needed?

Recommendations for further trialling of the intervention

Based on the results of the experiment and positive partner feedback, Keep Britain Tidy recommends that bin removal continue to be trialled across selected parks to build further evidence of its impacts on littering and fly-tipping. Trials should include a robust monitoring and evaluation framework to assess impact, including behavioural observations and/or short intercept interviews to complement the litter monitoring by capturing the amount of waste taken out of the parks. Monitoring should be conducted across at least three phases, including baseline and longer term monitoring phases. This

experiment conducted the longer term monitoring two months after bin removal, however we suggest additional longer term monitoring or allowing a longer period of time from bin removal for this phase to gather insights into the longer term impacts of the initiative.

It is recommended that land managers trialling the approach carefully consider the appropriateness of each park for the intervention by taking into account how it is used. For example, the experiment partners suggested that parks with household fly-tipping issues, particularly by litter bins in parks, were most appropriate, whereas parks that are popular with dog walkers were less appropriate without providing at least one bin for dog waste.

It is strongly recommended that key stakeholders be engaged in advance to gain their support for the initiative (e.g. residents and 'friends of' groups, elected members, etc.). A prepared 'frequently asked questions' document to respond to enquiries is also strongly recommended. This should include a clear rationale as to why specific parks were chosen.

Next steps of disseminating our findings and learnings

Keep Britain Tidy has already shared the interim findings of the experiment with park managers at a Parks for London event on 7 December 2018. Once we have sign-off from Defra, we will develop a short case study based on the experiment, including our recommendations for future trialling of the intervention. There is also an opportunity to publish a case study in the *Journal for Litter and Environmental Quality* to further disseminate the findings, however it may be more beneficial to wait for further evidence from other trials to add to this.

Keep Britain Tidy welcomes enquiries about the experiment from other land managers and funders who may be interested in trialling the initiative in parks. We will also seek funding to trial bin removal in other locations, such as on/near beaches and in transport hubs. We were very pleased to learn that both partners in the experiment are looking to continue the bin removal trials in other selected park in their areas, and we would be happy to support them and other land managers as needed.

Is there any other information you wish to share ?

e.g. Any media regarding the project, correspondence with those affected by intervention, or anything else of relevance.

None.

Feedback to us

Your feedback is important to us. We would be grateful for any comments on (or recommendations for future) Litter Innovation Fund management and materials:

Reflecting on the whole process, we can provide the following feedback and hope it's useful:

- The process seems very formal and bureaucratic. We appreciate that there will be certain requirements and stipulations for grant recipients, project delivery and documentation of how the grant was used, etc. There was lots of paperwork to read, which felt daunting and overwhelming. It contained lots of legal/contractual jargon which made it quite difficult and time consuming to read – which seemed at odds with the size of grant being delivered.
- We felt that the budgets available within the fund were quite small which significantly limited what we could deliver and achieve. Perhaps awarding fewer projects with larger budgets might generate more useful insights and provide greater opportunities to get more successful projects scaled quicker.
- The final report template felt quite repetitive, and for the type of projects that we were using it for, we were often documenting the same kinds of information in the different boxes/sections. Similarly, some of the information required in this form was also felt to duplicate information we submitted at the beginning of this process (e.g. project plan). We appreciate that there may be good reasons for this and so perhaps this might be unavoidable.
- In terms of using the insights generated from all the projects awarded by the fund, perhaps a two page case study of each project would be beneficial and more useful for dissemination than the full detail outlined in this form.
- The team at WRAP were on hand and were helpful and a good support.