

Case Study: Green Footprints

A social experiment to nudge people towards responsible litter disposal

What is the problem?

Local authorities and other land managers spend vast amounts of money and time clearing up litter and with current budget constraints, it is more vital than ever that we identify new ways to prevent it from being dropped in the first place. Keep Britain Tidy has been testing cost effective solutions to prevent littering across a variety of land use types. The aim of this is to identify and evidence a range of interventions that can practically be implemented by land managers. One example is the Green Footprints intervention, which we tested in 2014.

Developing a solution

The Green Footprints intervention uses 'nudge' theory to prompt people towards responsible litter disposal by increasing the salience of bins. Behavioural science has identified that salience plays a key role in how people respond to prompts¹. Salience refers to any aspect of a stimulus that works to attract people's attention. For example, practitioners might use environmental cues, incentives or messaging to attract people's attention by engaging with their cognitive, motivational and/or emotional functions. The Green Footprints intervention uses footprints placed on the ground in a 'walking design' to highlight and direct location users towards the nearest bin.



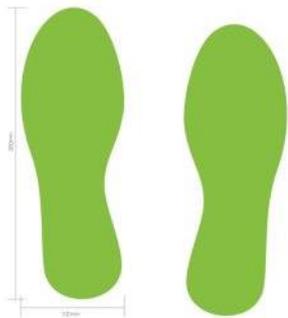
The green footprints *in situ*,
Darlington Borough Council

The approach was first developed and tested by Pelle Guldborg Hansen in Copenhagen in 2011. In a high footfall area, researchers gave out wrapped sweets to people in the street and counted the number of wrappers that were littered on the streets and placed in bins. They then placed green footprints on the ground leading up to litter bins in the area and repeated the sweets distribution and counting task. The result was a 46% decrease in wrappers that ended up on the street. The team who conducted the experiment believe that the footprints work as a visible, possibly subconscious, reminder for those who aren't fully aware of their actions when they litter.

We are aware that the green footprints have also been used in a few locations in the UK, however there was a lack of robust evidence to demonstrate their impact on litter and their longer-term effectiveness. Therefore, from August to November 2014, Keep Britain Tidy partnered with Cheshire West and Chester Council, Darlington Borough Council, Hull City Council and Northumberland County Council to replicate and robustly monitor the experiment in one park/recreational area and one main retail/commercial area per partner location (eight experiment sites in total). The sites were areas of high footfall and all had a sufficient amount of bins to be suitable for the experiment. It is our understanding that it was the first time the approach had been tested in parks and recreational areas.

1 EAST: Four simple ways to apply behavioural insights, The Behavioural Insights Team, April 2014.

The design of the footprints for the experiment was based on those used in Pelle Gulburg Hansen’s research. However, rather than painting on the footprints using stencils, we developed self-adhesive footprints using bright green, non-slip vinyl. A minimum of three pairs of footprints were placed at each bin within the partner target sites (approximately 150 bins in total).



The monitoring of litter was integral to the experiment as a measure of the impact of the green footprints. Using hand-held luggage scales, partners weighed and recorded all litter found at the target sites and all waste collected in bins. By measuring litter dropped on the ground as a proportion of all waste deposited at the sites (waste that was littered in addition to waste placed in bins), we were able to account for fluctuations in the number of visitors and other variables that may cause the overall amount of waste (and therefore litter) to change.

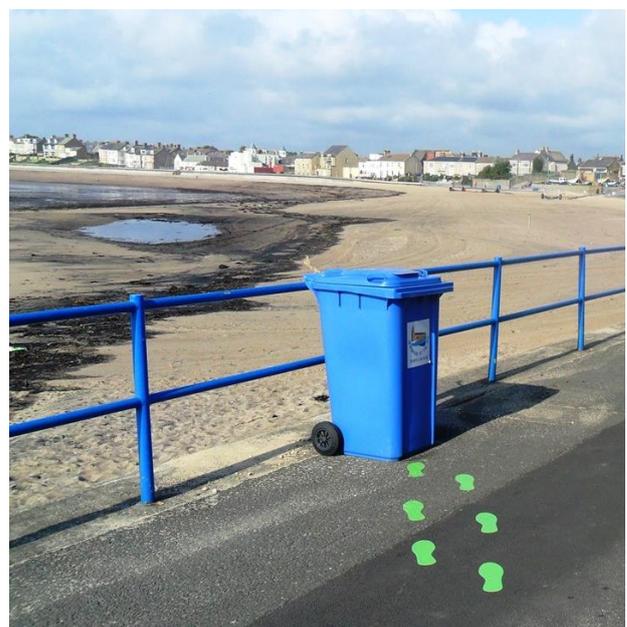
This monitoring was conducted for three weeks before the installation of the footprints (baseline monitoring) and for three weeks once installed (intervention monitoring).

What were the results?

Overall, there was an average 15.9% reduction in litter on the ground in the three weeks following the implementation of the green footprints compared to the baseline monitoring. Six of the eight testing sites experienced a reduction in litter. Hull City Council recorded the largest reductions in litter of the partners – a 46.1% decrease at its park/recreation site and a 42.4% decrease at its main retail and commercial site. Overall, the footprints were more effective in reducing litter at the park/recreation sites than at the main retail/commercial sites.

The partners conducted an additional three weeks of litter monitoring to assess the longer term effectiveness of the footprints, three months after installation. Unfortunately, however, the self-adhesive footprints used for the experiment did not stay in place and the experiment was unable to provide any firm conclusions regarding their longer term effectiveness. All partners lost at least some of their adhesive footprints during the experiment. This was due to mechanical cleansing sweepers lifting the footprints and to members of the public taking footprints, which became possible once the edges of the footprints started to lift as the adhesive wore away. It appears that the adhesive footprints were particularly unsuited to tarmac surfaces typically used on park floors. The

adhesive footprints were replaced with stencilled footprints using biodegradable paint, unfortunately this paint tended to ‘bleed’ around the edges in wet weather and needed to be frequently reapplied. Keep Britain Tidy recommends that future iterations of the approach conduct long term monitoring to assess its ongoing effectiveness, noting that more permanent materials for the footprints will need to be used to ensure their longevity.



The green footprints *in situ*,
Darlington Borough Council

Overall, all the partners were very satisfied with the Green Footprints experiment and felt that the green footprints had reduced littering in at least one of their target sites. All of the partners said that they were considering continuing to use the footprints in their current locations or rolling them out to new locations that they had identified, where they felt the footprints would be more effective or appropriate.

For example, a number of partners mentioned using the footprints in secondary retail areas and around primary and secondary schools. One partner organisation was making enquiries as to how footprints could be used to 'nudge' school children towards taking a safe route across school grounds (by avoiding a car park, for example).

Based on the experiment, Keep Britain Tidy made six recommendations aimed at practitioners wishing to replicate the Green Footprints intervention in their areas:

- **Recommendation 1:** Conduct site visits and behavioural observations prior to installing the footprints to ensure that the sites are appropriate for the intervention and to observe pedestrian traffic flows around bins so that the layout of the footprints can emulate this.
- **Recommendation 2:** Source permanent materials for the footprints, such as those used for road traffic markings.
- **Recommendation 3:** Consider increasing the salience of the bins themselves to complement the footprints. Brightly coloured bin wraps, flags above bins or even wraps that change colour in response to temperature could be used to draw attention to bins.
- **Recommendation 4:** Consider, in certain locations, increasing the salience of the footprints and bins after dark by using glow in the dark materials, light projections or even solar-powered LED lighting.
- **Recommendation 5:** Ensure that footprints are placed in a 'walking' design towards the bin, highlighting a path to the bin to location users, as opposed to in a 'standing' position. Photos or drawings could be provided to staff installing footprints to make their intended design clear.
- **Recommendation 6:** Where funding and resource allows, continue to monitor the impacts of green footprints alongside control sites to assess their longer term effectiveness and suitability to different land use types. This will help to add to the body of evidence for the use of footprints to change behaviour.

Taking the campaign further

The results indicate that the green footprints intervention has reduced litter levels on the ground at six out of eight testing sites. Based on these findings, Keep Britain Tidy believes that this low cost and practical solution could be replicated successfully by other land managers. Organisations who are considering implementing this approach in their areas are welcome to contact the Centre for Social Innovation to discuss any queries they might have.
