

CLEANER, HEALTHIER STREETS: POSSIBLE APPROACHES AND LIKELY BENEFITS

DOCUMENT PURPOSE: This document provides a summary of evidence on environmental crime and its health impacts, as well as the wider role of green spaces within this. It summarises some tested techniques for decreasing littering, vandalism and incivilities. It outlines the work that is underway at Newcastle City Council and makes some recommendations as to how this work might be supported by public health funds.

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DEFINITIONS

- **The injunctive norm** is what people believe that they, and others, *should* do. For example, people may believe that it is not socially acceptable to steal from others. Rules enforced by authorities fall into this category.
- **The descriptive norm** is what people believe that others are *actually doing*. For example, people may believe that others are stealing, regardless of whether this is deemed socially acceptable (whether it is the *injunctive norm*).

CONTENT ACCURACY: The content of this report was accurate, based on the available information at **December 2014**. However, approaches to environmental work within Newcastle City Council are constantly changing and facts and figures may become out of date. For up to date information, please contact [Jan Shimmin](#), Environmental Engagement & Education Team Manager, [Kit England](#), Policy and Information Officer, or [Roy Harris](#), Street Enforcement and Environmental Crime.

BACKGROUND: More than 30 million tonnes of litter are collected from England's streets each year (1). Street cleaning in England in 2012-13 cost £885 million (2) and these costs are predicted to rise in coming years (3). Newcastle City Council currently spends £2-3 million a year on cleaning the city in direct response to environmental crimes such as fly-tipping, littering, graffiti and dog fouling (4). This is no longer sustainable and behaviour change is essential if decent neighbourhoods are to be established across the city. Looking beyond financial sustainability, there are many other reasons to tackle environmental incivilities. The evidence suggests that having cleaner streets can reduce crime, boost local economies, encourage healthier behaviour and improve mental health (2). Some of this evidence is reviewed [below](#).

THE DATA FOR NEWCASTLE: In 2012-13, 38,684 environmental crimes were reported to [Envirocall](#), the Newcastle environmental service (4). Numbers were as follows:

- Fly tipping, 19,639
- Litter, 11,654
- Graffiti, 4,471
- Dog fouling, 2,648
- Drugs litter, 271

Incidents can be broken down by ward. Doing so shows that environmental issues are most prevalent in Elswick, Westgate, Kenton, Benwell and Scotswood, Byker and Wingrove. This finding is mirrored in the perceptions of Neighbourhood Services officers, who report that the worst affected areas are Elswick, Wingrove and Westgate (4). The distribution of reported environmental offences can be seen on the maps below (Figure 1, Figure 2, Figure 3).

People can be fined for environmental offences. In 2012-13, over 2,000 fixed penalty notices were issued and over 500 prosecutions were taken. A considerable proportion of the fixed penalty notices were issued to people who are residents outside the City. Prosecution figures are relatively low because the prosecutors must prove, beyond all reasonable doubt, that an offence has been committed and it is often difficult to obtain the requisite evidence (4).

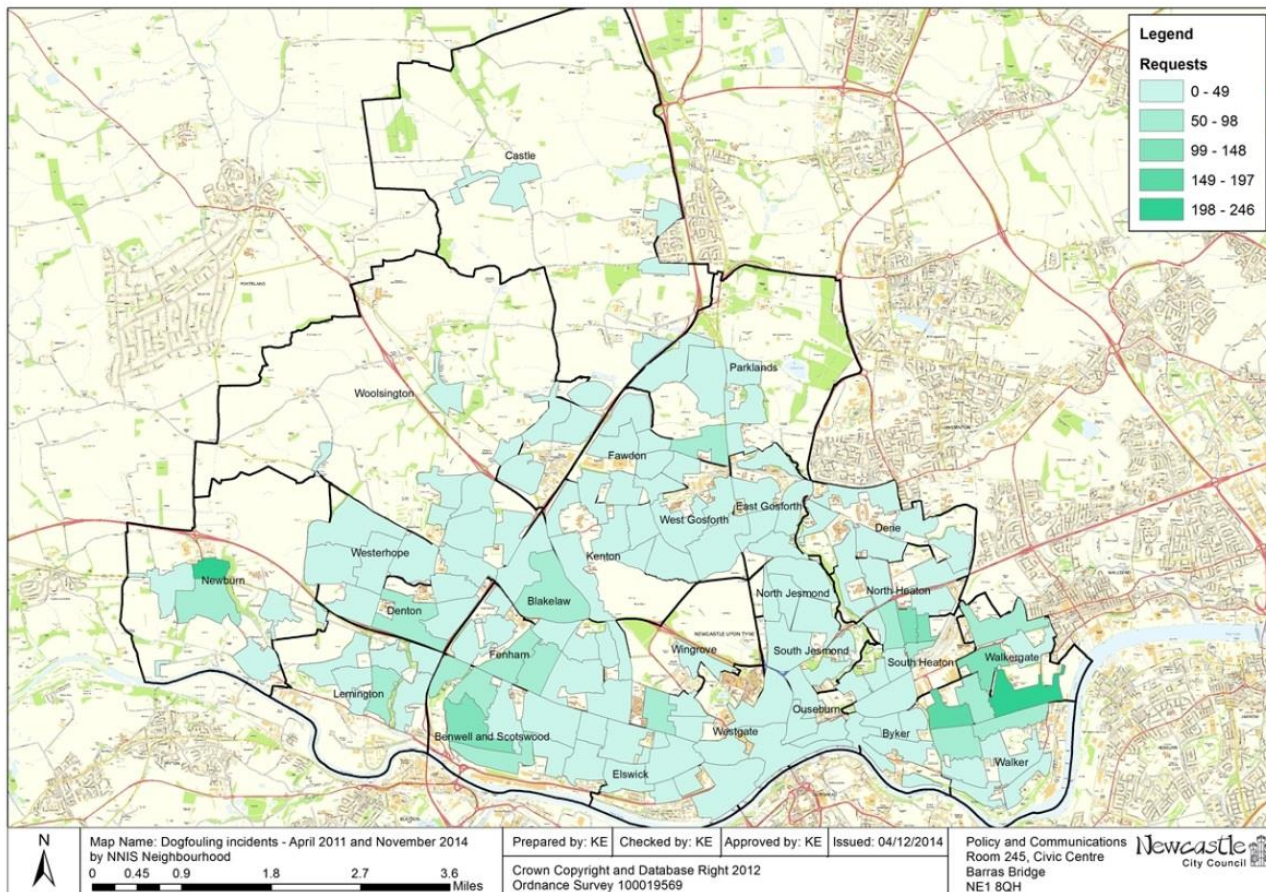


Figure 1. The distribution of reported dog fouling incidents by neighbourhood – 2011 -2014.

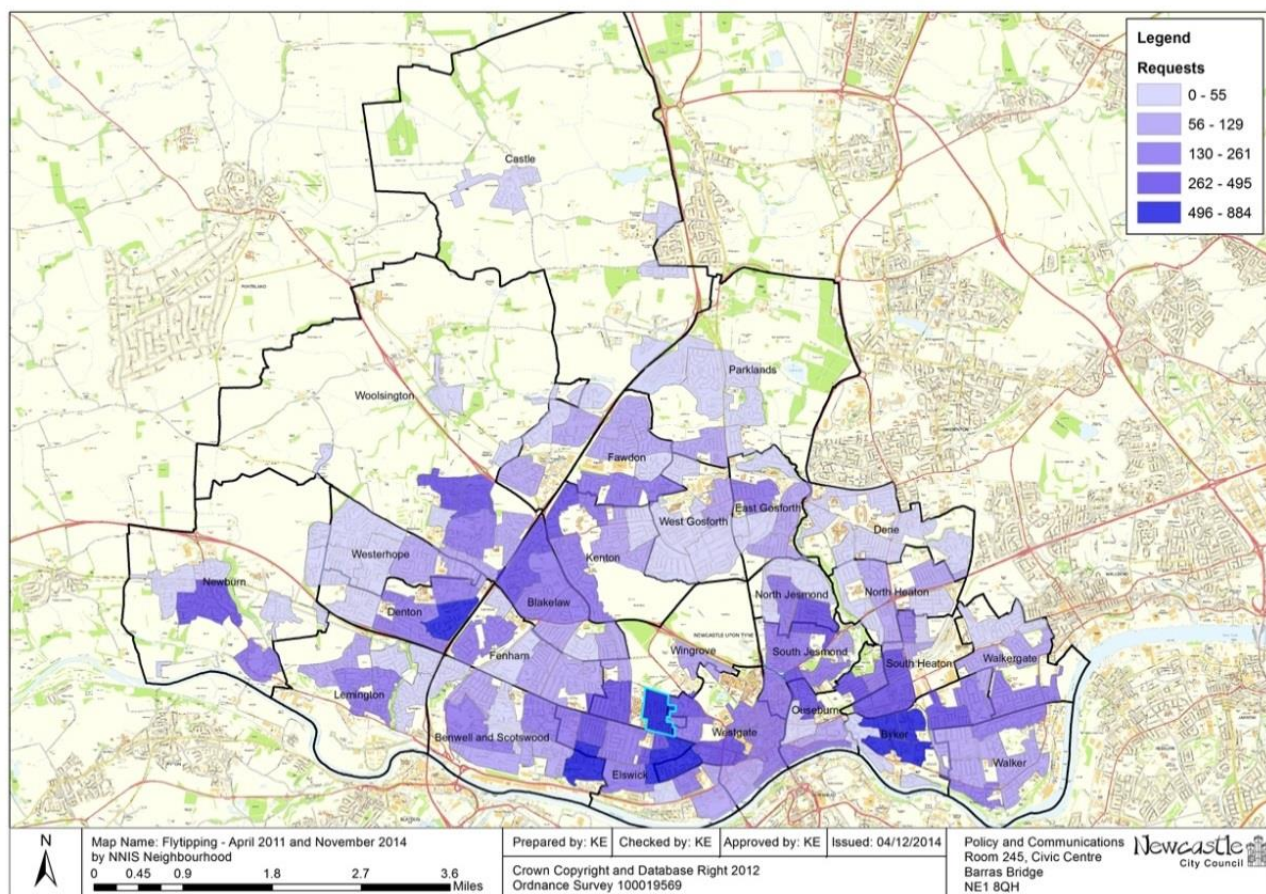


Figure 2. The distribution of reported fly tipping incidents by neighbourhood – 2011 -2014.

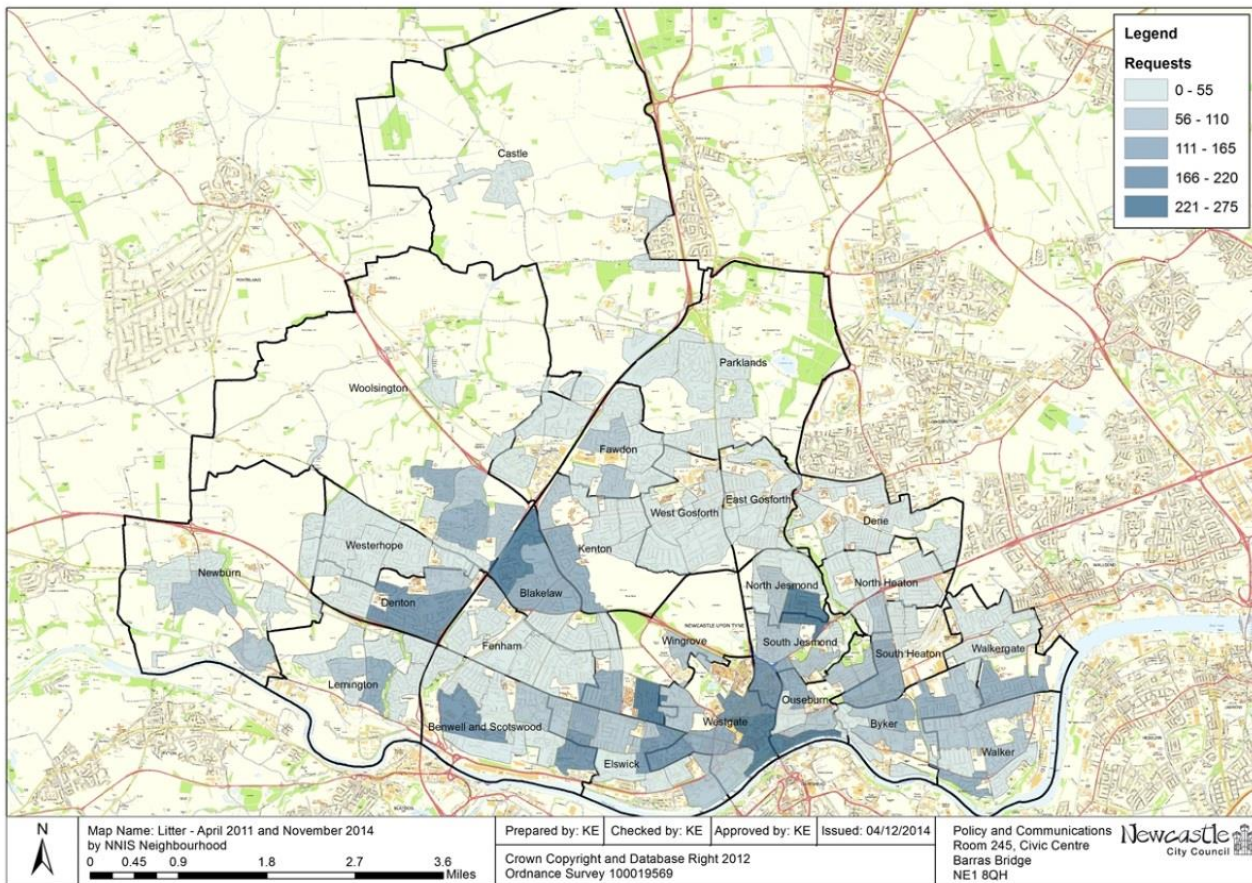


Figure 3. The distribution of reported littering incidents by neighbourhood – 2011 -2014.

NEIGHBOURHOOD DISORDER AND HEALTH AND WELLBEING: Evidence suggests that litter, graffiti and other signs of disrepair in public spaces affect health, wellbeing and criminal activity. Litter has been found to affect how safe people feel. It also has an impact on local economies because businesses are less likely to invest in littered areas (2). There is a large body of literature on the subject, but a few key findings are described in this document in order to provide an overview.

A local study examined the benefits of a neighbourhood renewal programme for physical and mental health (5). The programme took place in Scotswood, Newcastle upon Tyne, during the 1990s. It cost £5.5 million and included a range of environmental improvements, repairs to individual dwellings and security and road safety improvements. Residents were interviewed at baseline (1992) and then again after the improvements were completed (1997). The key findings were as follows:

- **The prevalence of psychological distress declined between 1992 and 1997:** In the cross-sectional data, there was a 10% decrease in adults reporting more than one mental health problem (from 52% to 41%). Among the longitudinal sample, the number of adults reporting “trouble with nerves” halved (from 20% to 10%).
- **There was a striking decline in the prevalence of smoking:** In the cross-sectional data set, smoking prevalence dropped from 77% in 1992, to 43% in 1997. In the longitudinal data set it fell from 72% in 1992 to 28% in 1997. This did not appear to be part of a national trend: the national proportion of adult smokers did not change between 1992-3 and 1996-7.
- **Those who continued to smoke also smoked fewer cigarettes:** In the cross-sectional data, the proportion smoking 10 or more cigarettes a day decreased from 90% to 80%.
- **There was a marked decline in the prevalence of psychological distress among children:** from 23% to 9% among the cross-sectional samples and from 21% to 2% among the longitudinal sample.
- **The number of visits that residents made to their GPs decreased:** The rate of GP visits declined from 16% to 0 in the longitudinal sample. However, there was no decrease in the cross-sectional sample.
- **Perceived area safety was a key predictor of psychological distress:** Residents who perceived the area to be unsafe were significantly more likely to report more than one mental health problem than those who perceived the area to be safe (odds ratio 2.35, $p < 0.001$) (5).



Figure 4. A photograph, taken in 2010, showing a more recent Scotswood regeneration scheme in action.

Evidence also suggests that neighbourhood cleanliness and safety have effects on residents' levels of obesity and physical activity. One pan-European study using World Health Organization data found that neighbourhood litter was associated with reduced exercise levels among residents (6). Another study found that European residents in neighbourhoods with high levels of objectively rated disorder (more graffiti and litter with less greenery) were about 50% less likely to be physically active and about 50% more likely to be overweight or obese (7). Another showed that people who perceived their neighbourhood to be clean were more likely to achieve recommended levels of physical activity (8). However, a systematic review of 41 studies on neighbourhood environments and physical activity found that such effects are not always seen and more controlled and longitudinal studies may be needed (9).

The UK National Ecosystem Assessment conducted by DEFRA and the UN Environmental Programme identified a number of health values from ecosystems. They concluded that ecosystems provide direct positive effects on physical and mental health. They also cited indirect positive effects such as reductions in the threats of pollution and disease vectors. The assessment found substantial evidence that Green Infrastructure aids participation in physical activity, improves self-esteem and mood, builds social capital and has positive impacts on heart rates and blood pressure. The assessment also suggested that contact with nature during early years can directly impact upon healthy adult behaviours (10).

There is also evidence that greenery, litter and graffiti, have effects on crime and incivility. This is important because many studies have demonstrated links between fear of crime and health (11; 12; 13; 14). One well controlled study examined 98 apartment buildings in an inner-city neighbourhood in Chicago. Buildings with higher levels of vegetation had 52% fewer total crimes, 48% fewer property crimes, and 56% fewer violent crimes than neighbouring buildings with lower levels of vegetation (15).

One ground-breaking paper demonstrated how neighbourhood disorder can lead to criminal behaviour. The researchers systematically manipulated signs of disorder, such as litter and graffiti, in a series of experiments (16). They showed that signs of disorder acted as subtle signals (of the [descriptive norm](#)) that others were not obeying the rules, making people more likely to break the rules themselves:

- **The presence of graffiti in a place with a sign prohibiting graffiti caused a relative doubling in littering:** Of those people who passed through a street without graffiti on it, 33% littered. In the same street when there was graffiti on the walls, 69% littered (16).
- **People were more likely to ignore a “no thoroughfare” sign when others had clearly ignored a nearby sign instructing them not to chain bicycles to a fence:** When no bicycles were chained to the fence, 27% used the forbidden thoroughfare compared with 82% when unauthorised bicycles were attached to the fence (16).
- **When people saw that others had ignored instructions to put away their shopping trolleys after use, they were more likely to drop the fliers that had been left on the windscreens of their parked cars:** In the experimental condition with unreturned shopping carts present, 58% littered. In the condition without abandoned shopping carts, 30% littered (16).
- **People littered more when they heard fireworks being set off on a day when it was widely known (in the Netherlands) to be illegal to do so:** Of those who did not hear illegally used fireworks, 52% littered compared with 80% of those who heard illegal fireworks being set off (16).

- **People were twice as likely to steal an envelope containing money from a post box when there was litter or graffiti in the area (Figure 5):** When the post box was clear of graffiti and litter, 13% of passers-by stole the envelope compared with 27% of passers-by when the post box had graffiti on it and litter around it (16).



Figure 5. An experiment in the Netherlands showed that people were more likely to steal an envelope containing money from a post box when there was litter or graffiti in the area (16).

The authors emphasised that, once disorder has spread, merely fixing the broken windows or removing graffiti may not be sufficient to break the behavioural cycle. Other measures should be put in place alongside clean-ups (16).

EVIDENCE ON THE CAUSES OF LITTERING AND OTHER ENVIRONMENTAL CRIMES: Research compiled by Keep Britain Tidy offers extensive information regarding public views on causes of littering (2). Surveys by Keep Britain Tidy have found that:

People are more likely to feel littering is acceptable or excusable if:

- The area is already dirty or run down.
- The litter will be cleaned up by others.
- There are not enough bins.
- Everybody else is doing it.
- They are drunk.
- They can't be seen by others.

People are less likely to litter if an environment is already clean:

- 7/10 people feel guilty for dropping litter and say that they are more likely to feel guilty doing so in a clean and well-maintained area.
- Areas that are already littered experience a five-fold increase in littering compared to 'clean' areas.

People are less likely to litter if they think they are being watched:

- In 2010, 31% of people admitted to littering out of their vehicles because they believed this was more anonymous than dropping litter elsewhere.

EVIDENCE ON TECHNIQUES FOR REDUCING LITTER AND OTHER ENVIRONMENTAL OFFENCES: A range of experiments have successfully decreased littering and other kinds of antisocial behaviour by altering aspects of the littered items, the bins, or the environment. Other programmes have tackled litter by working with communities and businesses.

Modifying packaging to reduce littering:

Studies experimenting with altering packaging to reduce littering behaviour have produced mixed results. One paper reported several studies (18), finding that:

- *Prominent* anti littering labels on coffee cups caused a reduction in littering (from 11.2% to 6.7%), but littering behaviour increased again when the labels ceased to be used (up to 14.1%).
- *Discrete* labels on cups did not have an effect on littering rates.
- Colourful/memorable packaging did not decrease littering.
- Experimentally distributed water bottles were less likely to become litter if they were brand named, rather than own-brand ones: 13.1% of own-brand bottles were littered compared with 5.2% of branded bottles (18).

The littering behaviour of teenagers is strongly influenced by that of their peers:

- Quotes from teenagers included, "*you wouldn't really put litter in a bin at school with your mates, it's a bit embarrassing*".

Many of the conclusions from these surveys are supported by the objective data:

Multi-level analysis of 9,757 observations at 130 locations across 10 U.S. states (17), found that:

- Older people littered less than younger people.
- Women littered less than men.
- People littered more where there was existing litter.
- People littered more if there were no bins.
- Littering increased with distance to the nearest bin.
- Most (85%) littering behaviour resulted from individual-level variables (e.g., age, gender, attitudes, and motivation). However, 15% of the variance in observed littering behaviour was due to some aspect of the context (e.g., existing litter or lack of convenient bins).

Modifying bins to reduce littering:

Various initiatives have attempted to reduce littering or increase recycling by modifying bins.

The Volkswagen Fun Theory initiative created a [bottle bank arcade game](#), which made depositing bottles more fun by adding lights, sounds and a scoreboard to the bin (19). Fun Theory also enhanced a standard litter bin so that it made sound effects as though the litter was dropping into a bottomless pit, calling it "[The World's Deepest Bin](#)" (19). The Fun Theory initiative only evaluated one bottle bank arcade game, and one deep bin. However, the results indicate that the modified bins were a success. The arcade bottle bank was used by nearly 100 people in one evening, while only 2 people used the nearby conventional bottle bank during the same period. Fun Theory also state that, in one day, 72kg of rubbish were deposited in the "World's Deepest Bin" while only 31kg of rubbish were put into an ordinary bin nearby (19).

Researchers at Newcastle University's Culture Lab installed cameras on bins, which fed back images of deposited waste to Facebook (20; 21). This BinCam system aimed to make users reflect on their recycling habits by allowing them to be scrutinised by others. BinCam was only trialled with 22 individuals in 4 shared households, so quantitative evaluation was not possible. However, qualitative results indicated that BinCam raised awareness and increased recycling behaviour among trial participants (20; 21).

[Talking bins](#) that use celebrity voices to thank people for correctly disposing of litter were trialled by Keep Britain Tidy in London and Liverpool in 2011 (22). Upon request, Keep Britain Tidy shared some results from the talking bin scheme:

- "Veolia Environmental Services reported that the Talking Bins collected 50% more rubbish than normal bins.
- "Enterprise Liverpool reported that waste collected in the city has increased by 15% since the bins were introduced."
- Note that Keep Britain Tidy did not share data regarding changes in the amount of litter found on the ground.

They also provided some quotes from the Local Authorities involved in the trial, including:

- "We've loved the Talking Bins. They've helped to raise awareness about litter from people of all backgrounds and ages. As a result, they've helped to reduce litter." Mark Banks, Head of Waste for Westminster Waste and Recycling.

[BigBelly bins](#) have produced solar powered compactor bins with a number of advantages. BigBelly bins have a large capacity (150 gallons) and a fully enclosed design. This means that they don't tend to overflow and the rubbish placed in them is less likely to be redistributed by wind and animals. Big Belly also produces [SmartBelly](#) bins, which send out alerts when full, allowing collection routes to be optimised (23). BigBelly bins have been trialled on Northumberland Street, but evaluation data are not yet available (24).



Figure 6. A BigBelly solar powered recycling bin and a BigBelly solar compactor bin.

Rochford District Council managed to reduce litter on the ground by turning their bins into charity donation cans. For three months, visitors to Rayleigh town centre who put their litter the bins on the high streets also helped to raise money for local charities. The campaign was a partnership between Rochford District Council and Keep Britain Tidy and was funded by The Wrigley Company (25). Each month, a different local charity was given up to £500 and the amount they received was decided based on the amount of litter that ended up in the bins, rather than on the ground. During each month of the pilot, the bins in Rayleigh High Street were labelled with a sticker explaining that one of three local charities would benefit if people put their litter in the bin. The litter binned in each charity's month was weighed and compared to the weight of the litter collected from the street. The pilot was successful with an average ground litter reduction of 41.7%. The biggest reduction in a single month was 53.3%. The local charities received £1,331.50 (26).

A Turkish company, [Pugedon](#), has created solar powered recycling bins that accept plastic bottles and dispense food and water for stray cat and dogs in return (27). No evaluation data are currently available for the Pugedon smart bins.

Modifying the surrounding environment to reduce littering and other environmental offences:

The most promising litter reduction results have come from experiments that altered aspects of the environments in which littering can take place. Multiple studies have examined the effects of eye images, which create a sense of being watched, on littering (28; 29; 30). Some have examined the effects of seeing others visibly restoring order (adhering to the [injunctive norm](#)) on various prosocial behaviours (31). Meanwhile, others have used scent (32; 33), or stickers designed to draw attention to bins (34).

Experiments have demonstrated that eye images can decrease littering in a variety of settings. One study, carried out in a cafeteria at Newcastle University (28), found that:

- Eye images substantially decreased the odds of cafeteria littering compared with a control condition using flower images (odds ratio = 0.51, $p < 0.05$ Figure 7).
- Littering decreased regardless of whether the eyes were paired with a message asking customers to clear their litter.
- The effect of the eyes was greater when the café was quiet - suggesting that eye images may be most helpful to reduce littering when people feel that their behaviour is anonymous (odds ratio = 0.26, $p < 0.01$) (28).

Another study at Newcastle University used eyes to decrease littering around campus bike racks (29).

The results showed that:

- When researchers intentionally manipulated surroundings so that litter was already present on the ground, passers-by littered more, mirroring conclusions from other studies (2; 16).
- Images of watching eyes reduced littering behaviour in large crowds – suggesting that eye images reduced the sense of being anonymous in a crowd (Wald = 4.263, $df = 1$, $p = 0.039$).
- The effect of existing litter was reduced by the presence of eyes (Wald = 1.303, $df = 1$, $p = 0.254$), suggesting that eye images could provide a cheap, effective littering intervention (29).

One study encouraged people to clean up litter by adding eyes to bus stops in Geneva, Switzerland (30):

- Eye images had no significant effect on the likelihood of people spontaneously clearing existing litter into bins.

- However, those who chose to clear up litter, spent about twice as much time doing so in the presence of eye images (as opposed to the flower images that were used as controls, $Z_{\text{Mann-WhitneyU}} = 22.17$; $p = 0.03$) (30).



Figure 7. One of the experimental eye images used to reduce littering in a Newcastle University canteen along with the one of the images of flowers that was used as a control.

An example of a campaign using the evidence reviewed above: One [current Keep Britain Tidy campaign](#) (Figure 8, below) used several key principles from the evidence reviewed [above](#):

1. **The poster uses eyes:** Studies have repeatedly demonstrated that people behave more prosocially in the presence of eyes. Eye images have been used to decrease littering (28; 29; 30), increase charitable donations (35; 36), and decrease rates of theft (37). Eyes images are thought to be most effective in quiet areas, where people don't have a sense of being watched, or in large crowds, where they feel anonymous (28; 29). The words "We're watching you" reinforce the feeling of being watched that is elicited by the image (Figure 8).
2. **It highlights an [injunctive norm](#);** that it is not acceptable to be a "thoughtless dog owner," who fails to clean up after their dog (Figure 8). Evidence shows that people are more likely to conform to injunctive norms when they believe that others are doing so (16; 31).
3. **It highlights a [descriptive norm](#);** that most other people (9 in 10) clean up after their dogs (Figure 8). If people perceive that the injunctive norm and the descriptive norm are aligned, they are more likely to conform to that norm (16; 31). That is, people are more likely to behave in a socially desirable manner if they believe that everyone else is doing so.
4. **It reminds people to, "Bag that poo, any rubbish bin will do" (Figure 8):** This slogan attempts to address the fact that people are more likely to leave dog mess behind if there isn't a suitable bin nearby (1; 2; 17).
5. **The poster glows in the dark.** Thus, it will be visible to people walking their dogs at night.

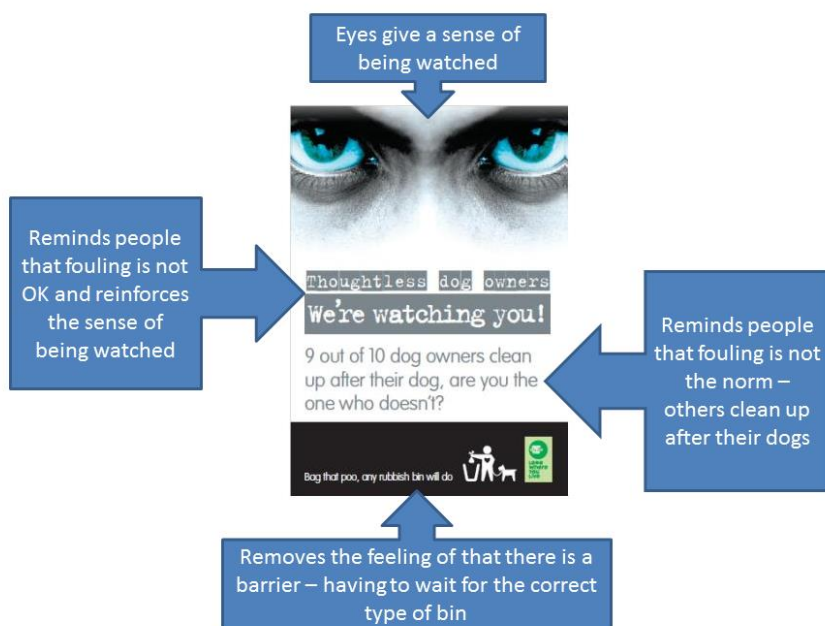


Figure 8. An annotated version of a poster from a Keep Britain Tidy dog fouling campaign piloted in 2014.

This campaign using posters of eyes has been extremely successful. The Keep Britain Tidy report (38) shows that all four posters that were trialled using the eye images successfully reduced dog fouling problems (a 46% average reduction across all sites). However, the poster above (Figure 8), which bore a positive reinforcement message, was the most successful, reducing fouling by 49%. Keep Britain Tidy are rolling out the campaign and are currently looking for partners who would like to be involved. The campaign package costs £1,500 + VAT and includes 40 customized Glow in the Dark A3 corex posters and campaign support. [Contact Keep Britain Tidy Network Enquiries](#) for more information.

A series of experiments in the Netherlands have demonstrated how altering the physical and social environment, including the presence of litter, impacts upon prosocial behaviour (31):

People were more likely to post a lost letter if the surrounding area did not contain illegally dumped garbage – a sign of disrespect for social rules: Only 10% of passers-by stopped to pick up and post a lost letter when illegally placed garbage was present. When the garbage was removed, the percentage of passers-by that helped was 24% (31).

People were more likely to right a fallen bicycle after witnessing cues suggesting that others respect social rules. The effect was larger when the cues were explicit: In a littered alleyway, 6% of individual passers-by stopped to put a fallen bicycle back on its stand. The percentage of passers-by who stopped more than doubled when the alleyway was clean, with 20% of individuals picking up the bicycle. When people witnessed someone actively demonstrating respect for order (dropping a soda can and picking it up again), they were even more likely to help: 34% stopped to pick up the bicycle (31).

People were more likely to help someone who had “accidentally” dropped oranges on the street if they saw signs of respect for order (Figure 9): In a clean street, 40% of people stopped to help. After seeing someone demonstrating respect for order by picking up a dropped soda can, 64% stopped to help. When a confederate (seemingly a resident) could be seen sweeping up rubbish further down the street, 82% stopped to help (31).

The experimenters made a policy recommendation (31), *“...don’t just keep it clean but clean up when people see it and display some effort in doing so.”*



Figure 9. An experiment in the Netherlands showed that people are more likely to help a stranger in need when they see someone restoring order by cleaning up the street (31).

Two studies have found that people are more likely to clean up after themselves when they can smell a lemon scent, which is commonly associated with cleaning products (32; 33). One laboratory study showed that participants who were given crumbly biscuits to eat were substantially more likely to clean up the crumbs when the lab smelled of lemon scented cleaning product (32). A field study found that passengers in train carriages that had been scented with citrus-scented all-purpose cleaner, littered substantially less: litter collected in the unscented carriages weighed in at 3.56kg, whilst litter collected from the scented carriages weighed in at 1.17kg (33).

Researchers in Copenhagen successfully reduced littering by 46%, using green footprint stickers on the ground, which draw people's attention to bins (Figure 10) (34). This approach is currently being tested in a UK-wide trial, coordinated by Keep Britain Tidy. Final results are not yet available, but preliminary results (at 26th November 2014) showed an 11-16% relative decrease in litter on the ground where footprints were used (for more up-to-date results, contact [Rose Tehan](#)) (39).



Figure 10. Researchers in Copenhagen reduced litter with green footprints that draw attention to bins.

Working with communities to tackle litter and other environmental offences:

Some argue that cleaning, greening and renewal programmes are most successful and sustainable when carried out in partnership with communities (40). The Carnegie Trust have reviewed community led projects and summarized some key successes, a selection of which is highlighted here (40):

- The [Civic Pride](#) programme, Rossendale, Lancashire was formed to tackle the high level of litter in the town, which was having a negative impact on businesses, and perceptions of the area. A local businesswoman led the formation of a community action group to clear up litter, maintain and improve public spaces, and promote positive behaviour. The result was a significant drop in litter levels, an increase in the attractiveness of public spaces and an increase in local pride (40).



Figure 11. The Civic Pride team at work on the A682 dual carriageway

- The [Clean Glasgow](#) Programme, Woodlands, Glasgow, was started because residents perceived incivilities such as littering, vandalism and fly-tipping to be a major problem in the area. The Local Authority launched a citywide programme designed to help public agencies and local communities work together to tackle incivilities. It resulted in a significant reduction in incivilities in Woodlands, and greater awareness of the how these problems can be avoided or addressed (40).
- The [Redruth Brewery Leats](#) clean-up in Redruth, Cornwall began because litter, fly-tipping and other incivilities were making a pathway running through the town unsafe and unusable. Led by a local councillor, residents took on an extreme clean-up of the pathway. A long-term plan was established for improving and maintaining the path, resulting in increased use. It also generated a growing impetus to solve the problems of derelict sites situated near the pathway (40).
- The [Tipton Litter Watch](#) project in Sandwell, West Midlands, started in response to severe litter and fly-tipping problems. Community activists formed a local action group who initiated an annual 'Big Spring Clean' programme, which has engaged 28,000 young people and collected nearly 120 tonnes of rubbish. This resulted in many areas of the town being more useable and attractive. The group also started an educational programme on local environmental issues, which is delivered in every school throughout the local borough (40).



Figure 12. Tipton Litter watch members with Carnegie Trust Trustees in front of their Eco Bus.

Past work in Newcastle has included the [Cowgate Fortnight](#). After a number of unsuccessful physical regeneration programmes in the area, this intensive programme of work was coordinated across multiple agencies, landlords and volunteers, with the aim of:

- Helping people on the Estate to find and keep work
- Tackling anti-social behaviour through co-ordinated action against crime
- Strengthening housing management and reducing voids
- Improving support for families and tackling domestic violence
- Improving health
- Offering more opportunities for young people on the Estate
- **Improving the environment by tacking litter and fly-tipping.**

The Cowgate Fortnight report suggested that the initiative was good value for money. Whilst the multi-agency approach and the nature of recording made it difficult to specify costs, it was estimated that direct costs were in the region of £5000. Costs were kept low because most partners were able to utilise existing staff resources by changing work patterns.

Other volunteer led initiatives aim to reduce litter by asking lots of people to take small steps. For example, [People Against Litter \(PAL\)](#) have one simple aim: each member should pick up at least one piece of litter a week and ask someone else to do the same. PAL currently have 1,013 members including high-profile supporters such as Bill Bryson and Jeremy Paxman.

Working with businesses to reduce littering and other environmental offences:

Evidence demonstrates that litter can damage the reputations of the brands whose packaging is littered (41). This provides an incentive for businesses to take action against litter as part of their corporate and social responsibility agenda. For example, McDonald's, KFC, Coca-Cola Enterprises and Wrigley recently signed up to Keep Britain Tidy's [Litter Prevention Commitment](#) (42). As part of this commitment, the businesses make financial contributions and also agree to aim to: 1) raise awareness of the social, economic and environmental impact of litter; 2) encourage responsible consumer behaviour in order to reduce the amount of litter dropped; 3) contribute to a reduction in the £1billion cost of cleaning up litter by taking positive action. Examples of activities undertaken with businesses include the Love Essex campaign (43), a partnership between all the Essex Local Authorities, Essex County Council, all McDonalds, KFC, and Dominos restaurants in Essex, The Highways Agency, RP2 Media and Keep Britain Tidy. The campaign promoted the idea that littering is 'not cool', 'not pretty', 'not smart' and 'not classy'. It highlighted the fact that litter costs taxpayers in Essex £17 million a year - an amount which could otherwise be spent on valuable public services. The result of the Love Essex anti-litter campaign was that branded fast food litter was reduced by over 40% across the county (44) (Figure 13).



Figure 13. McDonald's staff litter picking as part of the Love Essex Campaign, which achieved a 40% reduction in litter across the county (44).

THE SUITABILITY OF THE REVIEWED LITTER REDUCTION TECHNIQUES FOR LOCAL APPLICATION: This document has reviewed various techniques for reducing littering ([above](#)), some of which are more suitable for local application than others:

1. **Modifying packaging to reduce littering and other environmental offences** – Attempts to reduce littering by modifying packaging have produced mixed results, suggesting that more research is needed before such techniques are applied at scale ([see above](#)). Furthermore, measures involving packaging modification would require large scale cooperation from manufacturers and retailers. Such measures are therefore impractical for use at the local level.
2. **Modifying bins to reduce littering and other environmental offences** – Modified litter bins have the potential to reduce litter ([see above](#)). Trials of BigBelly bins have been undertaken on Northumberland Street. Depending on the evaluation results from the trials, funding for the lease of additional bins may be a prudent investment. However, there would be ongoing costs, which may make this option unsustainable.
3. **Modifying the surrounding environment to reduce littering and other environmental offences** – A number of studies have successfully modified aspects of the local environment in order to reduce littering ([see above](#)). Insights from these studies would be straightforward to implement at relatively low cost. An extremely successful example of one of these techniques, the use of eyes to reduce littering, can be seen [above](#). However, we do not yet know whether the effects of such interventions are sustained over the long term.
4. **Working with communities to tackle litter and other environmental offences** – Given that several wards in Newcastle are considered to be litter hotspots, a concentrated community clean-up approach may be appropriate ([see above](#)). However, such projects can be very resource intensive and the improvements made in areas such as Cowgate were not sustained in the longer term, suggesting that continual efforts would be required.
5. **Working with businesses to reduce littering and other environmental offences** – As reviewed [above](#), a number of anti-littering initiatives have been successfully supported by funding and activity from businesses. Though this support is coordinated at a national level by Keep Britain Tidy, it should pave the way for local activities. This approach has the potential to make anti-littering work more sustainable, as a short-term investment could fund the development of a corporate and social responsibility portfolio to allow anti-littering work to continue in the longer term.

RESOURCES CURRENTLY AVAILABLE TO NEWCASTLE CITY COUNCIL: Newcastle City Council has a range of existing resources for tackling litter and other environmental crimes. These are outlined below, but more detail is available in other documents (4; 45).

Neighbourhood Response Operatives - Neighbourhood Response Operatives and General Environmental Maintenance staff travel planned routes around the city and respond to jobs assigned from Envirocall - such as litter, fly tipping, graffiti and dog fouling. Their routes are reviewed on an ad-hoc basis based on feedback from managers and members (4; 45).

The City centre is cleaned overnight 5 days a week (all days except Wednesday and Thursday). No weekend cleaning is undertaken in high-profile shopping areas such as Shields Road and the West Road (4).

Neighbourhood Wardens - The Council has twenty six Neighbourhood Wardens, who are partly funded through a Service Level Agreement with Your Homes Newcastle. Their role is to reduce environmental crime, criminal damage, and anti-social behaviour and reduce fear of crime. They issue fixed penalty notices for environmental crime and gather intelligence for partner organisations. They are tasked through YHN and the Environmental Standards Group (45; 4).



Figure 14. Newcastle City Council Neighbourhood Wardens working to report environmental issues.

Environmental Crime Team - The Environmental Crime Team consists of three environmental health technical officers. They deal with a range of waste management and pollution control offences as well as other regulatory matters such as fly-posting, illegal street trading or public collections of money. They lead on investigations and increasingly work with partners such as the police to effectively target those committing crimes relating to waste and scrap metal (45; 4).

Dog warden - The team has one dog warden, who is responsible for dog control issues (45).

Enforcement officers – The team has six enforcement officers, who provide a visible presence and deal with local environmental quality issues - principally litter, dog fouling and fly-posting (45).

Team priorities - In accordance with the Priority Regulatory Outcomes for England, team priorities include:

- Tackling rogue waste carriers, who undercut legitimate operators and fly-tip customers' waste
- Offences that cause pollution and/or harm
- Improving quality of life and wellbeing by ensuring clean and safe neighbourhoods
- Offences that cause unnecessary cost to the local authority - such as businesses avoiding waste disposal costs (4).

As well as issuing fixed penalty notices for offences such as littering, the team manages environmental fixed penalty notices issued by neighbourhood wardens, parking officers and police (4).

Environmental Education and Awareness Team - This team was created in 2008 to support the introduction of the blue recycling wheeled bin service and to encourage environmental behaviour change. Their work has included door-step visits, awareness raising and the Enviro Schools programme. Due to budget reductions this team now has one manager and a full time officer, who continue to support the Enviro Schools service, which is now free, but managed through a service level agreement (45).

CURRENT ACTIVITY AT NEWCASTLE CITY COUNCIL:

Newcastle City Council has an Action Plan for Behaviour Change Towards Decent Neighbourhoods (24), which includes the following strands of work:

- **The Enviro Schools programme** - Schools are signed up to the [Enviro Schools programme](#) through service level agreements. The programme is tailored to the needs of the school and includes advice and guidance towards applications for [Green Flag awards](#). There is a focus on approaching schools in target areas to undertake projects as part of wider work in those areas. The programme works with partners at the Council and also with other organisations such as the Fire Service and Healthworks (24).
- **A trial of communal bins** – A pilot of communal bins is underway in Sandyford (Figure 15). Questionnaires are currently being sent out. A report will be available in early 2015. If the pilot is successful, there will be a consultation process for the roll out of the communal bins across the city (24).

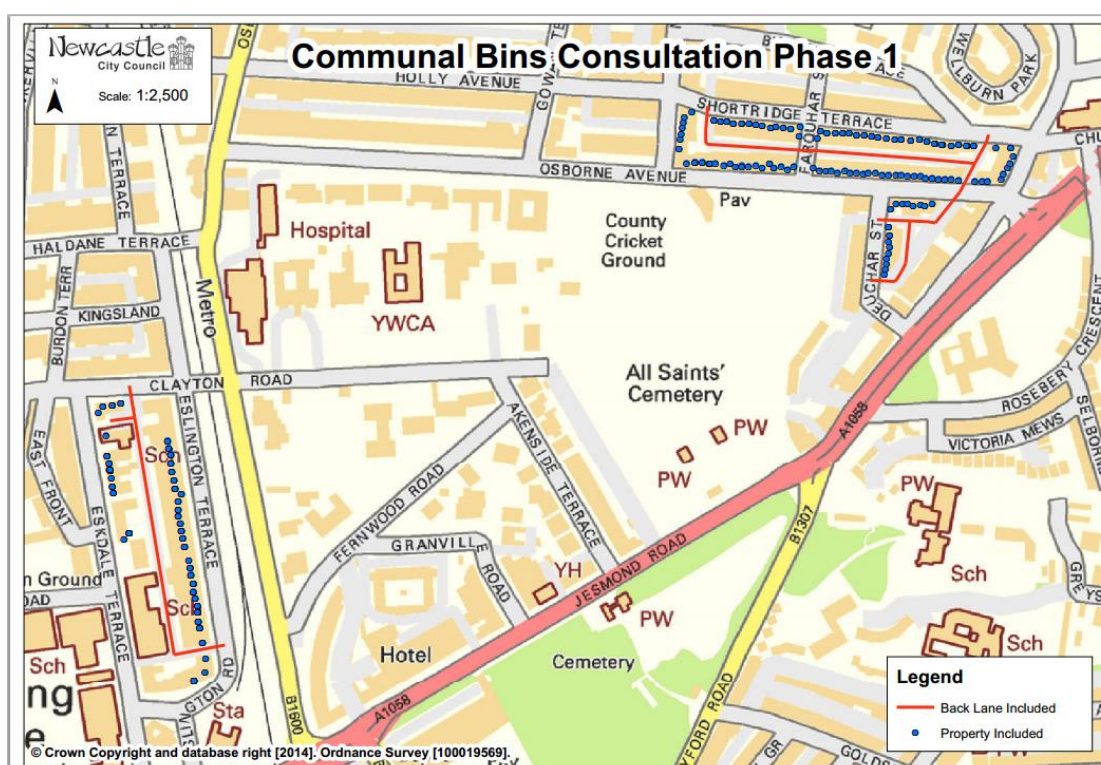


Figure 15. A map detailing the properties involved in the trial of communal bins in Sandyford.

- **Work with landlords** – The Council is working with the Landlord Forum to produce and distribute information to ensure that landlords and their tenants understand their responsibilities for waste management (24).
- **Engagement with students** - Students were contacted at the start of term, encouraging them to keep Newcastle clean and telling them about waste and recycling services. At the end of term, the Council will work with students and Universities to communicate messages about the problems of fly tipping. A DVD will be produced to show in student halls and on campus at the end of term. The campaign will contain key messages about; antisocial behaviour, noise nuisance, fire safety, parking permits, green travel, recycling and responsible waste disposal (24).
- **A waste minimisation and recycling programme** - Two pilot areas in the city will be chosen and targeted with information to promote waste minimisation and increase recycling, composting and

use of garden waste services. The work will be evaluated and the outcomes will be fed back to residents (24).

- **A Love Food Hate Waste campaign** – An 18-month [Love Food Hate Waste campaign](#) has been launched. Training will be offered to any groups who express an interest. Work will take place in partnership with Love Food Hate Waste and Morrisons (24).
- **Community led activities** – The Council will continue to work with key community led projects across the city; the Byker project, Greening Wingrove, the North Benwell Terraces and Edible Elswick. Work will include promoting volunteering activities and supporting residents with information about waste, recycling and caring for their area (24).
- **Environmental awards** – An award scheme will be developed to recognise and acknowledge the good work that is already being done by individuals, schools, groups and businesses to sustain decent neighbourhoods (24).
- **Trials of BigBelly Solar compactor bins** – BigBelly bins are have been trialled on Northumberland Street (see [above](#) for details) (24).
- **Additional warden patrols** – additional warden patrols will be scheduled at key times, such as Bank Holidays (24).
- **Development of bespoke communications** – Newcastle City Council commissioned [Drummond Central](#) to create a targeted communications campaign, aimed at reducing littering (Figure 16). This campaign will be rolled out in January 2015 as part of a wider communications initiative that aims to encourage behaviour change in communities (24).



Figure 16. Sample posters from the communications campaign to be rolled out in January 2015 (24).

- **Reorganisation of the bins in Ouseburn parks** – A survey conducted in February 2014 showed that there were 122 bins located throughout the Ouseburn Parks (Jesmond Dene, Heaton Park, Paddy Freemans Park, Armstrong Park and Jesmond Vale parks). These bins had previously been emptied by Park Keepers on a daily basis and many of the bin locations were only accessible on foot or by electric buggy. Following budget reductions, Park Keepers were made redundant and it was not possible to empty all bins on a daily basis. This meant that bins were often overflowing following busy weekends, generating numerous complaints. A poster campaign was run throughout the parks to encourage people to take their litter home if the bins were full. However, this had little impact (Figure 17) (46).



Figure 17. An overflowing bin displaying one of the unsuccessful “take your litter home” posters (46).

Park Keepers responded to this problem by reorganising the bins. They removed all of the 122 older bins and replaced them with 27 new wheelie bin covers with inserts (Figure 18). Consultation was carried out to determine the best locations for the bins and to inform people about the new approach. The consultation involved Managers from Street Services, Friends of Heaton Park, Friends of Jesmond Dene, Friends of Paddy Freemans and a drop in session for park users. The new bins were installed throughout the parks and notices were inserted into the advertising hoarding on the front of the bins. Over a period of weeks the old bins were removed in phases, with the final remaining bins being removed at the end of July 2014. Since the implementation of the bin pilot at Ouseburn Parks the number of complaints regarding litter has reduced to zero. The parks are much cleaner and the operatives can manage the litter in a much more efficient way (46). Following this success, Newcastle City Council hopes to introduce this approach to other parks across the city.



Figure 18. An image of one of the new bins being used in the Ouseburn parks (46).

RECOMMENDATIONS FOR SUPPORTING THE WORK THAT IS BEING DONE TO TACKLE ENVIRONMENTAL CRIME:

The evidence suggests that focused programmes of neighbourhood clean-up, repair and greening can be highly beneficial for health and wellbeing (see [above](#)). Thus, such programmes may prove successful. However, they tend to be costly, and the effects are not guaranteed to be sustained in the long term. It would therefore be wise to consider funding some additional (or alternative) measures. Some recommendations for such measures are listed [below](#). These could be used in isolation, or in combination, depending upon budget availability.

Option 1: Develop the evidence base to improve the use of bins

Litter, dog-fouling and cigarette bins are available for use across the city (4). Although some Neighbourhood Operatives have lists of bin locations, there is no central dataset that maps available bins across the city. Mapping the bins would enable operatives to assess how well used they are and whether redistributing them could help to reduce litter problems (as in the case of the Ouseburn parks, [above](#)).

The advantages: Mapping bins could allow their redistribution, which could reduce litter and allow collection routes to be optimised, making them more efficient and cost effective.

The risks: Mapping bins will not have an immediate or direct impact on the issue of litter and environmental degradation. Once the evidence is gathered, more work would need to be done before benefits could be realised for the Newcastle population.

Option 2: Conduct an ecosystem services assessment to identify future green space provision

Newcastle City Council lacks data on the supply and demand of Green Infrastructure in the City. Thus, data is also lacking on the functions (e.g. climate regulation, flood risk management, leisure, recreation and space for physical activity) that the Green Infrastructure performs and the value of these functions for the City. A local ecosystem services assessment would enable the creation of an overall supply and demand map for the City. The ecosystem services approach has been adopted by Birmingham City Council (47). Costs for a local ecosystem services assessment have been quoted at £12,000-£22,000, depending upon the level of assessment. Purchase of data on locations of private trees has been quoted at around £10,000 (contact [Kit England](#) for more information). It is also possible to request more detailed assessments, quantifying air quality improvements in terms of nitric oxide and nitrogen dioxide reductions. Detailed local green infrastructure audits would then be needed to help prioritise and develop programmes for specific areas.

The advantages: Mapping infrastructure would create a single evidence base for a variety of services, allowing Newcastle City Council to leverage additional investment for developing and improving local environments. It would enable planning officers to challenge developers on whether proposed developments meet local Green Infrastructure service needs. It would also help to identify priority areas for [Section 106](#) and [Community Infrastructure Levy](#) funds: The Council currently has £900,000 waiting to be spent on open spaces - ring-fenced to certain geographic areas. Assessment information could also underpin applications to the Local Enterprise Partnership's European Regional Development Fund money: There is currently £6.6million allocated to Green Infrastructure throughout Tyne and Wear to 2020. This could also open up access to other European funds such as [LIFE](#) (the European Commission's environment programme) and [Horizon 2020](#).

The risks: Mapping green infrastructure will not have an immediate or direct impact on the issues of litter and environmental degradation. Once the evidence is gathered, much more work would need to be done before benefits could be realised for the Newcastle population. In addition, ongoing maintenance costs are often raised as a concern.

Option 3: Develop the local corporate and social responsibility portfolio to support clean streets and green spaces

As reviewed [above](#), several major companies whose packaging tends to generate litter have signed up to Keep Britain Tidy's Litter Prevention Commitment (42). This paves the way to leverage local support from these, and other, companies for tackling litter in Newcastle. Funding additional capacity to develop a local environmental corporate and social responsibility portfolio could enable longer term improvements in terms of litter reduction. This could even be managed as part of the public health investment in developing and maintaining parks in the City (48).

This option could be readily combined with option 4 ([below](#)), which recommends providing small amounts of funding and support to groups to take community-led action against litter. For example, as part of the corporate and social responsibility agenda, local businesses could be encouraged to support community led initiatives by providing funding, leadership, volunteers or other in-kind contributions. This approach has been successful for other councils and examples of this are reviewed above in the sections on working with [businesses](#) and [communities](#).

The advantages: If their establishment is correctly managed, programmes supported by business could continue with minimal input the Council. An up-front investment in capacity to establish external relationships and programmes of work could lead to sustained reductions in litter even if internal resources are diminished.

The risks: Without proper succession management, any corporate and social responsibility programmes that are established as part of a short-term effort may lose impetus in the longer term. Thus, planning for sustainability should be a key consideration if this approach is taken.

Option 4: Provide additional resources to support community groups to tackle litter for themselves

There are a number of active community groups in Newcastle (see [above](#)) who are already working to improve their local environments. Giving additional support to such groups and connecting them with local business that might support their work could help to tackle litter whilst encouraging civic pride and corporate and social responsibility.

The advantages: This approach could be run alongside [option 3](#) at minimal cost. It would also make the positive actions of local community groups more visible. Visible demonstrations of respect for order have been shown to reduce littering and encourage prosocial behaviour (31): This approach could harness the benefit of such effects.

The risks: Community-led approaches tend to need continued support and leadership (40), which the Council may not be able to provide directly when funding and capacity are reduced. However, it may be possible to encourage businesses to provide ongoing support at this point (see [option 3](#)).

Option 5: Fund additional use of tried and tested litter reduction methods through Keep Britain Tidy

The research reviewed above shows that Keep Britain Tidy have a strong track record in trialling and evaluating litter reduction techniques. It would cost relatively little to fund the adoption of some of these

techniques in problem areas. For example, it would cost £1,500 + VAT to use their tried and tested [dog fouling posters](#) (for 40 customized Glow in the Dark corex posters plus campaign support).

The advantages: Anti-littering interventions produced by Keep Britain Tidy tend to be relatively low cost and have often been systematically evaluated for effectiveness. The evidence suggests that eye images such as those used in the campaign mentioned [above](#) tend to improve behaviour in general. Thus, although the posters target dog fouling, they may lead to a more general reduction in littering and other antisocial behaviours.

The risks: Most interventions trialled and promoted by Keep Britain Tidy are not evaluated over the long term. Thus, it is not clear whether any of them would generate sustained reductions in littering.

DATA THAT COULD BE USED FOR EVALUATION

Ideally, any additional work that is funded should be evaluated in order to assess its efficacy. It would be challenging to accurately evaluate the impact of any anti-litter work supported by Public Health funds, given the volume of environmental improvement work that is ongoing (see [above](#)). However, there are a number of data sources that are worth noting:

Measures of litter

- [Local Environmental Quality Survey](#) data is available annually (49).
- Data is available from the Council's [Envirocall](#) database, which logs environmental issues. These are logged either when a member of the public calls to report an issue, or when a neighbourhood operative uses their handheld device to log an issue (4; 45).

Measures of perceptions about litter

- The quarterly [Safer Communities Survey](#) is commissioned by the Northumberland Police and contains questions on perceptions of and concerns about litter and other incivilities (50).

A health- and wellbeing-relevant measure

- The Public Health Outcomes Framework contains an indicator called "[utilisation of outdoor space for exercise/health reasons](#) (51)." The data used to create this indicator comes from the [Monitor of Engagement with the Natural Environment survey](#) (52).

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