



A critical review of a key Waste Strategy Initiative in England: Zero Waste Places Projects 2008–2009

Paul S. Phillips^a, Terry Tudor^{a,*}, Helen Bird^b, Margaret Bates^a

^a School of Science and Technology, University of Northampton, Northampton NN2 6JD, UK

^b WRAP, The Old Academy, 21 Horse Fair, Banbury OX16 0AH, UK

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ABSTRACT

In 2007, in England, the Department of Environment, Food and Rural Affairs (Defra) published Waste Strategy 2007 for England. To help drive the required behaviour change for increased sustainable practice the Government in England signalled up in the Strategy the intention to launch a Zero Waste Places (ZWP) initiative to develop innovative and exemplary practice. By inviting places (including cities, towns and rural communities) to bid for ZWP status, the successful applicants were then expected to become exemplars of good environmental practice on all waste issues. The ZWP programme commenced in October 2008 with the selection of 6 distinct places based upon an application by a partnership containing a Local Authority or in one case a Regional Development Agency. The places ranged in size from the very small (one street of 201 properties) to a Region of England (5 million population). These 6 were chosen from an initial list of 12 applicants via a rigorous selection process against fixed criteria that were designed to support Zero Waste practice. The funding was £70,258 and the mean was £11,709. The overall assessment suggests that the Local Authorities and their project partners rose to the challenge of zero waste and in most cases met or even exceeded their objectives (meeting at least 80% of aims and planned actions) and achieved high value for money in terms of Government funded initiatives. Evaluation suggested that there is a requirement to link, in the future, ZWP initiatives with other recent developments such as Transition Towns, Eco-Town and Total Place developments within Local Authorities. A Certified Standard for ZWP was developed and is perceived as being both useful and valuable and it is hoped that it will spur a large number of new ZWP applications.

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1. Introduction

Changes in lifestyle and consumption patterns and the resulting impacts on the environment have led to increased calls for strategies to address these issues (Stern, 2006). One approach that has been suggested as a means of addressing these concerns is that of the concepts of 'Zero Waste'. Definitions of what constitutes zero waste vary. For example, according to the Zero Waste Alliance, the Zero waste philosophy is based on a 'closed loop system', with 'waste materials' serving as a potential source of raw material (Chalfan, 2001). Thus, for example, there would be zero waste during production and zero waste emissions to air, water or the land. Colon and Fawcett (2006) make mention of employing zero waste management to facilitate increased recycling, reduced dumping, as well as to improve citizenship within the community.

The concepts of 'Zero Waste' have been implemented in a number of countries (e.g. South Africa, New Zealand, China, India),

provinces (Nova Scotia (Canada), California), as well as by a range of companies (e.g. Dupont, Fuji Xerox and Toyota) (Greyson, 2007; Maete and Trois, 2008). For example, in MacKenzie, in New Zealand, the development of a zero waste policy led to the launch of a range of new waste minimisation systems in June 2002. These included a new 3-bag kerbside collection system for household residents, the construction and in-house operation of three new Resource Recovery Centres in each of the main townships, development of a comprehensive education programme, installation of a composting unit, and implementation of financial incentives to encourage separation of waste. Key to the success of strategy was its meticulous planning and its utilisation of the full range of skills at its disposal from the political skills of the Mayor to the communication skills of Ashburton's Mid Canterbury Wastebusters. It was able to achieve a waste diversion rate of around 70%, within one year of implementation.

Using a case study approach, this paper sets out to evaluate the development of zero waste initiatives in England, including the rationales for these initiatives, their successes and limitations, and suggest recommendations for improvement. The case studies were chosen from applicants to a Zero Waste Standard, which formed

* Corresponding author. Tel.: +44 1604 893372; fax: +44 1604 893071.
E-mail address: Terry.Tudor@northampton.ac.uk (T. Tudor).

a key component of the initiatives and which was developed and administered by the authors.

1.1. Zero Waste Places in England

In 2007, in England, the Department of Environment, Food and Rural Affairs (Defra) published Waste Strategy 2007 for England (Defra, 2007a). This Waste Strategy and its Annexes are part of the implementation for England of the requirements within the European Framework Directive to produce waste management plans. Within the UK there are 4 waste strategies; one for England and one each for the devolved Assemblies/Parliaments of Northern Ireland, Scotland and Wales.

Since the previous Waste Strategy in 2000 (DETR, 2000), England has made significant progress. The key objectives in England include a decoupling of waste growth (in all sectors) from economic growth and this is recognised through a new target to reduce the amount of household waste not re-used, recycled or composted from over 22.2 million tonnes in 2000 by 29% to 15.8 million tonnes in 2010 with an aspiration to reduce it to 12.2 million tonnes in 2020 – a reduction of 45% (Defra, 2007a). This is equivalent to a fall of 50% per person, from 450 kg per person in 2000 to 225 kg in 2020.

This progress has been driven by significant changes in policy. The landfill tax escalator and the introduction of the Landfill Allowance Trading Scheme (LATS) have created sharp incentives to divert waste from landfill. New delivery arrangements helped to drive the Strategy, including the Waste Implementation Programme (WIP), the Waste and Resources Action Programme (WRAP) and the Business Resource Efficiency and Waste (BREW) programme (Defra, 2007a).

Prior to the Waste Strategy in 2007, a number of influential UK environmental lobbying groups were making the clear case for a profound change in practice through a major zero waste development in England. The Green Alliance, in 2006, pointed out (Hill et al., 2006) that New Zealand and many other countries and cities around the world had gone as far as embracing the concept of a zero waste society. Zero waste means going further than maximising recycling, to stopping things being discarded and moving on to waste prevention. It was pointed out (Hill et al., 2006) that whilst the UK recycled only about 30% of all waste at that time, in places such as San Francisco, Flanders and Kamikatsu, recycling levels were already around 70% and rising. It was notable (Hill et al., 2006) that in many of these places the zero waste concept originated as a grassroots movement, driven by local activists and public authorities; the very partnerships proposed by Waste Strategy 2007 (Defra, 2007a). The Green Alliance made clear (Hill et al., 2006) that “A Zero Waste UK” offers an alternative vision of a shared responsibility between Government, product manufacturers, retailers and consumers to increase recycling and waste prevention. With the new Waste Strategy being worked on this report provided a timely contribution to the policy debate.

To help drive the required behaviour change the Government in England launched a Zero Waste Places (ZWP) initiative to develop innovative and exemplary practice (Defra, 2007a). By inviting places (including cities, towns and rural communities) to bid for ZWP status, the successful applicants were then expected to become exemplars of good environmental practice on all waste issues. Participating places would be asked to fulfil a pathfinder role in identifying the barriers and illustrating solutions to enable others to adopt the most effective approach. It was hoped that these would develop and show exemplary partnership working between Local Authorities and other sectors including the third sector on waste and other environmental issues to drive towards zero waste. The ZWP initiative was launched in October 2008 (Defra, 2008a).

Table 1
Zero Waste Places and funding 2008–2009.

Project	Funding
London Borough of Brent – Green Zones	£15,000
Milton Keynes – Shenley Church Urban Estate	£10,000
Kings Lynn and West Norfolk Borough Council – Tuesday Market Place	£8400
London Borough of Lewisham – Green Street	£10,058
Peterborough City Council – Central Shopping Area	£16,800
West Midlands – Zero Waste to Landfill	£10,000
<i>Total</i>	<i>£70,258</i>

Zero waste in England is defined as (Defra, 2008a): “A simple way of encapsulating the aim to go as far as possible in reducing the environmental impact of waste. It is a visionary goal which seeks to prevent waste occurring, conserves resources and recovers all value from materials”.

Defra approached the BREW Centre for Local Authorities to run its ZWP initiative and during 2008–2009 six path finding places were selected to go as far as possible to reduce waste in their area. A list of all the path finding ZWP projects is contained in Table 1 and their geographical location in England in Fig. 1. The projects range from community inspired initiatives focussing on a single street or area to a region-wide programme to reduce waste to landfill to zero by 2020.

In 2009, Defra announced (Defra, 2009a) a new increased emphasis on England becoming a zero waste nation. It was proposed that by 2019, 75% of household waste will either be recycled or used for energy. This will be achieved through the impact of a whole raft of new strategy components and by closer partnership working between a wide raft of players to support the drive towards zero waste. A new ZWP Standard for Local Authorities was developed by the BREW Centre and the University of Northampton in collaboration with other BREW partners including WRAP and Envirowise. It is hoped that in the near future a large number of Local Authorities in England will apply for Certification that they have met the ZWP Standard.



Fig. 1. Zero Waste Place Projects in England 2008–2009.

Table 2
Essential and desired requirements for consideration as a Zero Waste Place 2008–2009.

Essential requirements	Desired requirements
Clear actions for achieving zero waste	Precise focus for each action Precise timings for completion of each action Size of the 'place' (e.g. a region, authority boundaries, a city, a town, a market place)
For each action, a commitment on which partners will lead or contribute to its achievement and evidence that the responsibility for the commitment is mainstreamed in each participating organisation	Precise commitments for each action
Challenging, measurable goals or targets as part of the actions	How project will be funded
Commitment to spread good practice	How the actions will be measured (and the precise way of measuring)
Commitment to attract media coverage and popular support for campaign.	Precise form of commitment
Ensure arrangements in place for ZWP status to be discussed with key players in monitoring and evaluation	Precise methods of dissemination
	Precise forms of media

However, in the move towards zero waste a large number of issues have started to emerge. It is a complex field as zero waste covers much more than simply solid waste and it tackles many aspects of wider environmental concern. There are a wide range of publications considering topics such as the challenges presented to policy makers (Zotos et al., 2009), energy issues (Bagci, 2009), MSW composition (Chang et al., 2008) and the processes involved in working towards a zero waste environment (Young et al., 2010).

Delivering effectively in a ZWP project will be challenging for all players as a review for Defra (2009b) found that there is no standard set of behaviours which underlying household waste prevention for zero waste. In practice, it can include: rejecting junk mail; reusing food leftovers; home composting; donating electrical goods to charities (Derby and Obara, 2005); buying second hand clothes; and avoiding single-use bags etc (Barr, 2004; Biswas et al., 2000). Waste prevention (Barr et al., 2004), unlike recycling (Barr et al., 2003; Ebreo and Vining, 2001) which is a more singular and well defined act (Tonglet et al., 2004), comprises many small individual behaviours (De Young, 2000), which tend to be private and invisible which makes the development of a social norm and the monitoring of behaviour more challenging (Read et al., 2009). New approaches to campaigns that promote pro-environmental behaviour (Gilg and Barr, 2005) are needed as is an understanding by practitioners that wider campaigns than just solid waste management issues need to be designed (Cleveland et al., 2005).

1.2. Zero Waste in Wales

Within the UK, at the present, Wales has moved rapidly ahead (Wales Assembly Government, 2009) and the Wales Assembly Government will be publishing its Waste Strategy for Wales "Towards Zero Waste" in the late summer of 2010. Wales' definition of Zero Waste is: "An aspirational end point where all waste that is produced is reused or recycled as a resource without the need for any landfill or energy recovery".

Wales aims to achieve zero waste by 2050 (in combination with a 70% recycling target across all sectors by 2025). This fits with Wales' goals to be more sustainable overall and to reduce Wales' ecological footprint to 'one Wales: one planet' levels by 2050. The strategy currently assumes that the other 30% of waste is treated using energy from waste technology. To achieve this ambitious target, the strategy currently proposes a number of waste minimisation and reuse targets:

- 295 kg/inhabitant/annum in 2013; and
- 150 kg/inhabitant/annum in 2025.

There are a number of zero waste initiatives in Wales (AEA, 2010).

1.3. Zero Waste in Scotland

The Scottish Parliament is currently consulting on a new National Waste Management Plan which sets an overarching aim to achieve zero waste by 2050 (Scottish Government, 2009). The new plan should be finalised in late 2010. Like Wales, Scotland is aiming for a 70% recycling and composting rate by 2025 and energy from waste to be no more than 25% by 2025.

Zero Waste in Scotland is defined by the Scottish Government (2009) as: "Zero waste does not mean that waste disappears. Instead, it means eliminating the unnecessary use of raw materials; sustainable design; resource efficiency and waste prevention; re-using products where possible; and recovering value from products when they reach the end of their lives either through recycling, composting or energy recovery, in accordance with the waste hierarchy".

The Scottish Government's spending plans for the period 2008–2011, includes an allocation of £154 million to a new Zero Waste Fund.

2. Zero Waste Places Projects in England 2008–2009

2.1. Zero Waste Places and funding

The Zero Waste Place programme commenced in October 2008 with the selection of 6 places (Table 1 and Fig. 1). These 6 were chosen from an initial list of 12 applicants via a rigorous selection process. The funding is shown Table 1. The total spend was £70,258 and the mean was £11,709.

The essential requirements for selection as a ZWP in 2008–2009 are in Table 2. These enabled the applicants to design a project that would reflect the aspirations of the initiative.

The criteria used to judge the applications and the weightings given are in Table 3.

2.2. The six Zero Waste Place Projects 2008–2009

2.2.1. London Borough of Brent – Green Zones

The London Borough of Brent, in London (Fig. 1), has a population of between 269,000 and 289,000 and is still growing, with up to 30,000 extra residents to accommodate over the next 10 years. It

Table 3
Criteria and weighting used to judge the application 2008–2009.

Criteria	Weighting	Criteria	Weighting
Background	5	Targets and milestones	10
Scope	15	Value for money	10
Objectives	15	Longevity	10
Outcomes	15	Co-ordination/partnership working	15
Outputs	15	Expansion plans	5
Deliverables	10	Commitment	10

Table 4
London Borough of Brent – Green Zones: aims and key planned actions.

Aims and key planned actions
<i>Project aims</i>
To recognise and reward residents who demonstrate positive behavioural changes in waste and recycling, energy efficiency, water efficiency and smart travel
To encourage local residents to take part and strengthen community links
<i>Key planned actions included</i>
Establishing at least 20 Green Zones by September 2009
65% of houses within the Green Zones to be recycling at least 5 materials and 2 organic streams
70% of houses within the Green Zones to be using water saving devices
30% of houses within the Green Zones to be using sustainable transport
Three green teams to demonstrate waste reduction through smarter shopping and greater awareness of waste avoidance techniques

is one of only two Authorities in the UK serving a majority black or ethnic minority (BME) population. Over 130 languages are spoken within the Borough. It has acute deprivation levels. The Borough has 8000 permanent businesses. With major regeneration underway, this has major implications for the Borough's performance on waste management. The Borough's challenge was to deliver an environmental education programme in a way that was suitable for all the community. The 'Green Zone' was suggested by a local resident as a way of improving the local environment. The resident believed that environmental messages are better communicated face to face rather than relying on leaflets and booklets. The aims and key planned actions are in [Table 4](#).

2.2.2. London Borough of Lewisham – Green Street

The London Borough of Lewisham, in London ([Fig. 1](#)), has a long history of trying to reduce the environmental impact of activities within its boundaries. In addition to household recycling, the authority delivers recycling services to businesses and has embarked on a strategy to reduce the carbon impact of the authority's supply chain. The 'Rockbourne Triangle', an area of roughly 201 properties was chosen to be the project area – covering Old Stanstead road, Rojack road and Rockbourne road in the Forest Hill area. The aims and key planned actions are in [Table 5](#).

2.2.3. Milton Keynes – Shenley Church Urban Estate

The project focused on one urban estate in Milton Keynes ([Fig. 1](#)); Shenley Church End. The area encompasses 1489 dwellings and includes all the amenities of a modern urban estate. Some 73% of homes are owner occupied, 22% private rented or shared own-

Table 5
London Borough of Lewisham – Green Street: aims and key planned actions.

Aims and key planned actions
<i>Project aims</i>
To create an 'Eco Street' in which waste to was reduced as far as possible
A Zero Waste campaign would be undertaken across the chosen area with an intensive scheme for a target number of households
To tie in with existing waste campaigns such as 'Love Food Hate Waste'
To evaluate success via a pre and post-scheme waste and recycling participation survey
Leverage of external money into project
<i>Key planned actions included</i>
Doorstep awareness-raising campaign including a behavioural questionnaire to get baseline
An environmental pack for each resident
Advice and support on real nappies, garden waste, food waste and smart shopping
Pre and post recycling participation rate surveys
Waste audits
Implementing sustainability improvements to houses (up to £100 in value)
An event for the street, developed with residents, featuring free bicycle maintenance, cycling lessons, unwanted item exchange, energy advice, recycling information and composting workshops

Table 6
Milton Keynes – Shenley Church Urban Estate: aims and key planned actions.

Aims and key planned actions
<i>Project aims</i>
To increase the kerbside recycling rate to 50% (household waste only) by reducing residual waste and increasing recycling
To increase participation in the household recycling scheme
To reduce (halve) residual waste from small businesses and encourage them to be more resource efficient, including looking at waste-generating properties of their business outside their premises, e.g. the use of plastic bags
To run an anti-litter/tidy up campaign with the Parish Council
<i>Key planned actions included</i>
Personal "zero waste" visit to each household and an information pack
Waste audit and advice supplied to all non-household premises
A community Zero Waste event
A 'Big clean-up' event
A 'Real nappy' event
A home composting workshop
Educational visits to the Material Reprocessing Facility for local schools

ership and 5% council rented or shared ownership. Nearly all of the housing stock was built between 1987 and 2006. There are a number of local shops including a small supermarket, newsagent, pharmacy, bakery and bookmakers. Currently Milton Keynes Borough Council measures the dry recyclables tonnage as a percentage of the total kerbside recyclables and refuse collected by round. On this basis, Shenley Church End had a rate of 33% recycling, slightly above the average of 32% for Milton Keynes overall in 2008/2009. The aims and key planned actions are in [Table 6](#).

2.2.4. Peterborough – Central Shopping Area

The historic core of Peterborough City centre ([Fig. 1](#)) is focused on Cathedral Square and the 3 streets leading from it. These three streets and shopping centre have a combined total of over 200 retailers and offices, including the Town Hall and council offices. Cathedral Square was to be redeveloped and the Council were keen to ensure that sustainability was at the heart of the construction project. A previous audit of the shopping centre led to a 10% reduction in waste to landfill and an increase in both reuse and recycling. There was an ambition to roll out the audit methodology to the rest of the 'city centre' retailers and undertake sector specific pilot projects as well as engage the wider general public in recycling. The aims and key planned actions are in [Table 7](#).

2.2.5. Kings Lynn – Tuesday Market Place

The Tuesday Market Place is at the historic core of the town of Kings Lynn ([Fig. 1](#)) and is the centre for many commercial and leisure activities. The area hosts a chartered street market operating three days per week, a number of pubs, restaurants, shops and offices as well as Government buildings, historic docks and 143 flats and houses, many of which are traditional terraced. The Tues-

Table 7
Peterborough – Central Shopping Area: aims and key planned actions.

Aims and key planned actions
<i>Project aims</i>
Identify barriers to reducing waste to landfill and identify solutions to overcome these barriers
Encourage businesses to reduce waste through being more resource efficient
Introduce recycling to those who were not recycling
Increase recycling amongst businesses who already recycle
Increase awareness and knowledge of waste related legislation – particularly Duty of Care and Pre-treatment
Identify successful methods for engaging both the commercial sector and the general public (including shoppers and visitors) in moving towards Zero Waste
<i>Key planned actions included</i>
A waste audit for the defined 'city centre'
A high profile Zero Waste Place campaign
A Zero Waste fortnight for businesses
An educational package for city-centre based businesses

Table 8
Kings Lynn – Tuesday Market Place: aims and key planned actions.

Aims and key planned actions
<i>Project aims</i>
To boost the diversion of waste produced by commerce and residents from landfill
To increase business compliance with environmental legislation
To achieve a closer working partnership with waste services
To act as a point of best practice to other groups in West Norfolk
To influence the continued regeneration of Tuesday Market Place and the surrounding area
<i>Key planned actions included</i>
Implementing recycling/composting of paper, cardboard, glass, plastic and food waste
Acting as a demonstrator of best practice to other towns and areas throughout Norfolk
Influencing regeneration work to reduce environmental impact

day Market Place is a focus of a vibrant economy with many tonnes of mixed waste being produced each week by the varied occupiers of the area. The aims and key planned actions are in [Table 8](#).

2.3. West Midlands Region – Zero Waste to Landfill

The West Midlands ([Fig. 1](#)) lies at the centre of England, with five million people living within the Region. The West Midlands Regional Assembly recognises the impact that waste has on both the sustainability and economy of the region. Management of waste cost businesses in the West Midlands 4% of their annual turnover (£3.56 billion) in 2007–2008. The aims and key planned actions are in [Table 9](#).

3. Results

3.1. London Borough of Brent – Green Zones outputs and wider benefits

[Table 10](#) contains information on the major outputs and wider benefits for the London Borough of Brent – Green Zones project. Over 80% of the aims and planned actions ([Table 4](#)) were delivered to a satisfactory degree during the project. Some main actions not fully reached were the establishing of at least 20 Green Zones and

Table 9
West Midlands Region – Zero Waste to Landfill: aims and key planned actions.

Aims and key planned actions
<i>Project aims</i>
To engage with businesses that produce a large quantity of waste to identify their needs
To develop a strategy to strengthen leadership in the West Midlands' waste industry
To identify waste management infrastructure needs
To ensure that waste infrastructure needs are reflected in regional and local planning
To work with partners to create a voice for the waste industry
To improve data sharing amongst relevant parties for decision-making
To evaluate the impact of the Landfill Tax Escalator on waste management facilities
<i>Key planned actions included</i>
A programme of waste reduction advice to Small to Medium Enterprises (SMEs) in the region
A partnership to deliver Regional Leadership on Waste Management
A programme to bring forward waste infrastructure developments
Some 300,000 tonnes of commercial and industrial waste diverted from landfill by 2012/2013
Reducing CO ₂ emissions as a consequence of the above, by 172,375 tonnes by 2012/2013
Creating 35 jobs by 2011 as a result of growth and in the recycling and reprocessing sector
Developing and delivering a public procurement programme for waste management facilities

Table 10
London Borough of Brent – Green Zones. Some key outputs and wider benefits.

Some key outputs and wider benefits
1000 homes were given three low energy lightbulbs
18.2 tonnes of CO ₂ savings have been made by households converting to energy efficient lightbulbs
In the current Green Zones, 1000 households are now recycling
Green Zones saw an increase in recycling participation, with at least a 13% increase
One household which qualified for a Warm Zones grant saw a fuel bill savings of almost £200
One street started to grow their own food in a bid to reduce the amount of packaging waste
Using volunteers who are out of work to develop skills to get them back into employment
Increased community cohesion – including the involvement of Brent's Refugee Forum

30% of houses using sustainable transport ([Table 4](#)). A main lesson coming out of evaluation that will guide future projects is that “one-size does not fit all and setting up and promoting Green Zones in different areas needs to have targeted communication depending on what the residents most value. For example, in several cases it was found that cost savings and community cohesion were greater incentives for people to become involved than the environmental benefits”.

3.2. London Borough of Lewisham – Green Street outputs and wider benefits

[Table 11](#) contains information on the outputs and wider benefits for the London Borough of Lewisham – Green Street project. Over 80% of the aims and planned actions ([Table 5](#)) were delivered to a satisfactory degree during the project. Some main actions of particular value were the pre and post recycling rate surveys ([Table 5](#)). Pre participation surveys shows an overall participation rate of 68% and the post participation an overall participation rate of 80%, which was an increase of 12%. A main lesson coming out of evaluation that will guide future projects is that it is “beneficial to have a launch event at the beginning of the project to raise people's awareness of what the council were looking to achieve”.

3.3. Milton Keynes – Shenley Church Urban Estate outputs and wider benefits

[Table 12](#) contains information on the outputs and wider benefits for the Milton Keynes – Shenley Church Urban Estate project. Over 80% of the aims and planned actions ([Table 6](#)) were delivered to a satisfactory degree during the project. An aim not fully reached was the increase of the kerbside recycling rate to 50% ([Table 6](#)). A main

Table 11
London Borough of Lewisham – Green Street. Some key outputs and wider benefits.

Some key outputs and wider benefits
The total project budget was £67,000, Defra contributed £10,058 (15%)
The average weight of waste showed a 37% reduction over 3 month period
The weight residual waste went from 1.5 kg/hh/week to 0.8 kg/hh/over 3 months, a reduction of 53%
The weight of food waste found in the residual waste was down by 39%
Overall recycling participation rate was 80%, a 12% increase from the previous 68%
The drop in residual waste could save the authority approximately £40,000 per year if all 201 properties reached the same level of performance as the best practice ones
If the benefits of the wider Zero Waste campaign were to be measured against the benefits of the intensive waste auditing and advice, Lewisham recommends opting for the intensive approach as it is more targeted and direct and yields better value for money
Residents commented that there was clearly greater community cohesion

Table 12
Milton Keynes – Shenley Church Urban Estate: some key outputs and wider benefits.

Some key outputs and wider benefits
 A reduction in the number of households who were non-recyclers from 81 to 50
 15 tonnes of material diverted from landfill from the 'new' domestic recyclers
 15 tonnes of organic waste diverted from landfill through the new composters
 Contact with 40% of the 1457 households was achieved whilst doorstepping
 Over 300 people attended the 'Zero Waste Day' event and 50 compost bins were sold
 Campaign resulted in 165 joining the Zero Waste Mailing list and 59 joining a Facebook group
 Guidance for local businesses which could achieve a diversion rate of 64% from landfill
 Residents commented that they had noticed an improvement to street cleanliness

lesson coming out of evaluation that will guide future projects is that "the door-stepping campaign helped to increase the number of people recycling although it did not increase the overall quantity of recycling collected and was more successful in areas of more basic housing with a lower tax band".

3.4. Peterborough – Central Shopping Area outputs and wider benefits

Table 13 contains information on the outputs and wider benefits for the Peterborough – Central Shopping Area project. Over 80% of the aims and planned actions (Table 7) were delivered to a satisfactory degree during the project. A main aim that caused problems was "Encourage business" (Table 7). A main lesson coming out of evaluation of this aim, that will guide future projects, is "the time it takes to engage fully with businesses takes longer than anticipated. This is overcome through enlisting more staff support".

3.5. Kings Lynn – Tuesday Market Place outputs and wider benefits

Table 14 contains information on the outputs and wider benefits for the Kings Lynn – Tuesday Market Place project. Over 80% of the aims and planned actions (Table 8) were delivered to a satisfactory degree during the project. A main aim that was not fully met was "closer working partnership with waste services" (Table 8). A main lesson coming out of evaluation of the aims, that will guide future projects, is "the barrier to national chains recycling waste remains a problem. This is due to centrally managed contracts and/or remote decision making and the frequency of service that the council can sustain".

Table 13
Peterborough – Central Shopping Area. Some key outputs and wider benefits.

Some key outputs and wider benefits
Business engagement
 Over 50 opportunities to reduce waste were identified through the waste audit questionnaires
 7 office based organisations which took part in the Zero Waste Fortnight produced less than 1 kg of waste each during the period. Staff also confirmed behavioural changes that extended beyond the period challenge and carried through to affect choices and decisions made at home
Redevelopment of Cathedral Square
 The redevelopment firm achieved Zero Waste to Landfill at the end of the project
 3050 tonnes of material was saved from landfill
 1500 tonnes of carbon emissions prevented
 £20,000 of cost savings for businesses
 Funding awarded by Coca Cola to install the public recycling bins
 Reusable materials produced from the regeneration of the Cathedral Square were delivered to local community groups and clubs

Table 14
Kings Lynn – Tuesday Market Place. Some key outputs and wider benefits.

Some key outputs and wider benefits
 40 businesses visited
 5 businesses beginning to recycle using private waste companies
 8.92 tonnes of cardboard was recycled in 1 year from the Tuesday Market Place street market
 40.24 tonnes of glass was recycled in 9 months from businesses
 6.1 tonnes of glass was recycled in one year from domestic properties
 A glass recycling service was launched for resulting in 18 businesses joining, this included the take-up of the service by the Royal Household
 An event was held, promoted local radio station KLFM, to promote waste prevention and recycling and 75 people attended
 The ZWP initiative acting as a catalyst to replicate street market recycling in a second area

3.6. West Midlands Region – Zero Waste to Landfill outputs and wider benefits

Table 15 contains information on the outputs and wider benefits of the West Midlands Region – Zero Waste to Landfill project. Over 50% of the aims and planned actions (Table 9) were delivered to a satisfactory degree during the project. This very ambitious project had some very challenging aims and planned outcomes (Table 9). A main lesson coming out of evaluation of the achievement of the aims and planned actions, that will guide future projects, is "there was significantly more interest from Regional partners in the initiative than originally anticipated. Additional resource had to be seconded in order to ensure that opportunities were not missed".

3.7. Overall Defra assessment

An internal Defra evaluation suggested that Local Authorities and their project partners, in the 2008–2009 projects, rose to the challenge of zero waste and exceeded their objectives. In addition they achieved high value for money in terms of Government funded initiatives. The expenditure of small sums (Table 1) of 'seed corn' funding seemed to provide sufficient resource. In addition, high levels of positive media attention were generated and there were substantial international enquiries from organisations looking to replicate and/or learn from this initiative. Above all, zero waste status acted as a catalyst for further action within these places with all the projects continuing their work after the funding period ended.

4. Discussion

There has been rapid development in zero waste thinking and planning in the UK. England, in 2007, commenced Zero Waste Place development through a clear strategic intent (Defra, 2007a). Wales (Wales Assembly Government, 2009) and Scotland (Scottish Parliament, 2009) have announced, in their consultations on new Waste Strategies, that they are aiming to move towards becoming

Table 15
West Midlands Region – Zero Waste to Landfill. Some key outputs and wider benefits.

Some key outputs and wider benefits
 The Defra Zero Waste pilot led to a positive post bag from a variety of organisations including waste infrastructure operators and major retail site managers
 The updating and mapping of data on actual recycling and reprocessing capacity in the region has allowed the Waste Planning Authorities to study the impact of the Landfill Tax and make appropriate assessments
 The results from data collected to assess the quantities of waste arising in the region were launched at a major event attended by over 110 representatives of the waste industry and Local Authorities in the West Midlands

zero waste by 2050. These bold moves are underpinned by substantial resources and in the case of Scotland by a fund of some £154 million.

4.1. Evaluation

The ZWP initiative in England commenced with 6 projects in 2008–2009 (Table 1 and Fig. 1). The overall funding was £70,258 (Table 1) with a mean of £11,709. This level of funding does raise the question whether it was large enough to support all 6 places in their project delivery? Did it cover all costs such as staff time? Was it the only funding available to the project team? BREW funding, at the time (2008–2009), to Local Authorities for delivering a wide range of projects had a mean >£30,000. Typical Defra research projects (2007) in sustainable waste management, for the Waste and Resource Research Strategy programme (Defra, 2003) were funded up to a value of £250,000 (Read et al., 2009), at this time, with a mean around £100,000 (Defra, 2008b). Small levels of funding may be thought sufficient to support small projects but in the UK, to obtain detailed outcomes, for a small number of homes (50), the funding often reached £2000 per home (Maycox, 2003). This is to be compared to the 201 properties in Lewisham (Tables 1, 5 and 11) that utilised £10,058 at a mean of £50. Is the sum of £10,000 sufficient for a project the size of a region (West Midlands Region) in England (Tables 1, 9 and 15), especially as the outputs were going to be used to promote a cascade of ZWP uptake? However, it is possible that the project may have been underpinned by other resources that were 'In Kind' – by the Development Agency.

But is it always essential that Government put large sums into new developments especially if they are bottom-up and driven by the local population? Government spending is not always effective or efficient. A recent National Audit Office (NAO) report on the BREW programme (2005–2008) addressing business waste (National Audit Office, 2010) pointed out that it was not possible to conclude that the £240 million of expenditure delivered value for money for a host of reasons including no quantified objectives.

When any Government policy, programme or project is completed or has advanced to a pre-determined degree, it should undergo a comprehensive evaluation. Major or on-going programmes, involving a series of smaller capital projects, must also be subject to ex post evaluations (HM Treasury, 2003). Evaluation examines the outturn of a policy, programme or project against what was expected, and is designed to ensure that the lessons learned are fed back into the decision-making process. This ensures that Government action is continually refined to reflect what best achieves objectives and promotes the public interest (HM Treasury, 2003).

The results of an evaluation should summarise how effective the activity was in achieving its objectives, the cost effectiveness of the activity; and what the results imply for future management or policy decisions. The results obtained for the projects should generally lead to recommendations for the future. The overall Defra assessment (Section 3.7) suggests that "Local Authorities and their project partners rose to the challenge of zero waste, exceeded their objectives and achieved high value for money in terms of Government funded initiatives". This response was considered after a review of all outputs and wider benefits achieved (Tables 10–15) compared to the aims and planned actions (Tables 4–9) that themselves were based upon the essential requirements (Table 2) and criteria for acceptance (Table 3). Overall, in light of the very small funding (Table 1), it seems likely that the projects did surpass expectations and delivered clearly on aims and planned actions.

The "high value", cost effectiveness comment (Section 3.7) is, however, difficult to verify as much of the outputs and wider ben-

efits are hard to quantify so that cost effectiveness cannot be used with any certainty. In the case of resource efficiency clubs, in the UK, for commercial and industrial waste (Coskeran and Phillips, 2005) it is possible to use this metric as the key performance indicators were developed for the projects so that they would provide detailed financial savings to compare to costs. The "seed corn" funding comment (Section 3.7) is key. It enables Defra to say with some precision that large funding is not always essential and a range of carefully designed projects can run in the future with very small resource. This is evidence to break the cycle of large spending on, sometimes poorly designed, programmes (National Audit Office, 2010). The high levels of "media attention" (Section 3.7) are difficult to verify, there being no baseline to compare to. However, "catalyst for further action" (Section 3.7) is accurate as the places continue their activities.

Many of the outputs and wider benefits for ZWP were qualitative (e.g. general comments by say a public body representative) with no numerical support (e.g. % of population). These must not however be neglected as they reflect how the local population perceived change/improvement and this is central to obtaining evidence for policy makers from a bottom-up designed project (Defra, 2007b).

Not every project had the same degree of success. The West Midlands Region – Zero Waste to Landfill (Tables 9 and 15) did not reach more than 50% of aims and planned actions. This is a case where targets were too ambitious and on a very large scale so that slippage was to be expected. In any future funding rounds clear criteria (Table 3) must be developed to risk assess whether the targets are too ambitious in any one bid. On the positive side, the London Borough of Brent (Table 10) managed to attract some 1000 homes to participate in regular recycling and drive up the recycling rate by 13%. The London Borough of Lewisham (Table 11) managed to help drive food waste down by 39% as well as lever in some 85% of the total funds used. Milton Keynes (Table 12) recruited 165 residents to a zero waste mailing list. Peterborough (Table 13) diverted 3050 tonnes from landfill and Kings Lynn (Table 14) used the ZWP to replicate the project in other street markets in the area. It is not a simple question of what was not achieved but perhaps what alternative activities the teams adopted during the projects to deliver more than was simply required.

What must be taken into account is that the drive for many of these projects was that of a bottom-up approach (Golobic, 2010). Top-down approaches by Government often lend themselves to detailed evaluation as the projects are designed to be evaluated. Not always so for bottom-up, which is based upon the views of those who are most affected but not part of an established hierarchy (Meslin, 2010). Government has to develop a new approach to listen to and absorb the voice of those who drive a bottom-up approach (Sevenant and Antrop, 2009) and learn to extract lessons from the disparate evidence base (Defra, 2007b). Since the loss of Landfill Tax funding for waste management projects by the general population in England (Phillips et al., 2004) much less funding is available for innovative bottom-up approaches and so the number of such projects has dropped dramatically, top-down has become the norm in England.

At the launch event for the initiative in 2008 a number of issues were raised by the audience (a wide range of waste experts), via general questions. One major one was that funding was not attractive enough either to warrant the amount of time required to write an application or deliver an effective project. Some Local Authority representatives because of this were sceptical – believing that the initiative would be a 'flash in the pan' like some other Government funded initiatives. So the level of the financial support for the initiative was being opened to question at the commencement. The Government need to address these concerns and ensure that the ZWP has a long term future by perhaps linking it to a range of other similar developments.

4.2. Future synergies in England: Transition Towns, Eco-Town, Total Place and ZWP?

It is vital that ZWP developments are seen by the public as not just being a new waste management development for the short term but one that has a very long term future. Too many new initiatives can lead to 'information overload'. Recent research has shown (Defra, 2009c) that waste management is not as significant an issue for the general public as say environmental pollution. The survey revealed that some 35% pointed out that environmental pollution is a key issue for Government whereas recycling (waste) was only 1%. The ZWP must be seen to be more than just waste.

There are synergies between the above initiatives and ZWP, particularly carbon emission reduction through energy efficiency, water saving, sustainable transport as well as sustainable waste management. Community is also central, including well-being, self-help, cross sector partnership working over a range of issues and a sense of local identity – the sense of community or 'place' whether it is a street, village or town. The key common factor with many of these types of initiatives is that they can take a holistic approach across a range of resource efficiency and local environmental quality issues of concern to local communities. This joined up approach, which seems to be favoured by the people involved in such initiatives, could lead to a strategic alignment between different Government programmes (all of which aim to promote different aspects of the same overall goal – greater resource efficiency and lower carbon emissions) and result in greater synergies.

Transition Towns (TTs) (also known as Transition Network or Transition Movement) is a movement that aims to raise awareness of sustainable living and build local resilience in the near future. The aim is to equip communities for the dual challenges of climate change and excessive use of oil. There are over 260 communities in the UK. Totnes, in the UK, is considered the best example of this bottom-up approach (<http://totnes.transitionnetwork.org/>). A Transition Network also helps TTs to apply for combined funding bids to the National Lottery or other national grant giving bodies. So linkage of ZWP to TTs may open doors for external funding apart from Defra.

For Eco-Towns, the Government is to embark on an intensive green home building programme, which aims to build over 600 homes to the strictest ever environmental standards. The Eco-Towns will be new communities with 5000–15,000 homes with green space, schools, health care facilities, businesses and shops. Each will have the highest level of design and will also showcase the best of new green technologies. Funding of £60 million was given for construction work and they are expected to deliver Government targets on green towns by 2016. Most of the show-homes will be on sale, but many will be kept to demonstrate to those in the towns and villages nearby the latest green technology including smart metering, advanced recycling and waste systems and electric car charging facilities. Linkage to these new towns opens up possibilities for ZWP for utilising that new funding.

Total Place is a new Government initiative that looks at how a 'whole area' approach to public services can lead to better services at less cost. The potential of the Total Place approach is enormous with opportunities for pooled budgets, more control over local funding, a broader influence and commissioning role for local Government, as well as room for experimentation and innovation around early intervention schemes, innovative commissioning models and local variation in the delivery of public services. Total Place is a top down approach driven by Government and implemented at high level within a Local Authority. ZWP tends to be a bottom up approach that is often driven by Local Authority officers in conjunction with local partners and/or the local community. ZWP could have a role in helping Local Authorities implement a holistic

approach towards resource conservation/efficiency as part of Total Place.

4.3. Dissemination strategy

There is no clear evidence about the effectiveness of the dissemination of the ZWP initiative. Zero Waste Place clearly needs more publicity to explain itself to a wider audience and communicate its achievements and benefits. This will require an adequate budget and resource (time). Defra should consider undertaking a pro-active programme targeting the technical press for sectors relevant to the agenda e.g. waste, environment, community/NGO sector, regeneration, sustainable development and the public sector. In particular there is the need for an annual 'Towards Zero Waste' conference designed around a pro-active programme of engagement with key potential partners/stakeholders who would benefit from utilising the ZWP concept to further their own programmes and achieve their targets. The potential costs of the above are informative. It is likely that the plan for such an annual conference, in light of typical BREW past funding, would be around £20,000 per annum. This will be some 35% of the total budget for the projects 2008–2009.

4.4. Recommendations for the future of the initiative

The definition of zero waste should be broadened to encompass all resources (waste, energy, water, transport) and include carbon reduction. Specifically, ZWP needs to dispel pre-conceived notions about the nature of zero waste being associated with Zero Waste to Landfill and energy from waste. It should also communicate the achievements and benefits of ZWPs, especially those encompassing wider social and community issues.

More detailed consumer qualitative and quantitative market research should be carried out into the zero waste and other campaigns e.g. TTs, to determine whether too many brands inhibit public activity. If this is the case then consideration should be given that the strongest 'brand' (the one which resonates best with the public and provokes the strongest positive response) should be promoted and used across the spectrum of the issue agendas to communicate and engage with the public.

During 2009–2010 a Certificated Standard for ZWP was developed by the BREW Centre, Defra and the University of Northampton. The ZWP Standard is relevant and is perceived as being both useful and valuable. It recognises the achievements of Local Authorities in delivering on ZWP activities. It is funded by applying the Local Authority paying a small fee for Certification. This is a means to continue ZWP without sums of Government finance apart from dissemination (Section 4.3). However, the present Standard needs revising to improve take-up and increase its potential to positively impact on waste prevention and minimisation issues. This includes the need to revise it to a clearer, more transparent award scheme. Clear attention should be given to developing an incremental award scheme with say 3 levels, for a wide range of organisations not just Local Authorities, which recognise progression along the journey towards zero waste.

The change in the UK Government in May 2010 has resulted in the ushering in of significant reforms in all areas, including at the local level. For example, the introduction of the concept of the 'Big Society' promises to radically modify governance structures, with for example, greater local control. Coupled with these shifts in the political and policies agendas, are the significant economic pressures which the country and by extension organisations and programmes face. Thus, these changes will be vital to ensure that within such a rapidly changing policy and legislative landscape in the UK that the concepts remain relevant and up-to-date.

5. Conclusions

To help drive the required behaviour change by the public for increased pro environmental practice in municipal solid waste management in England, the Government launched a Zero Waste Places (ZWP) initiative to develop innovative and exemplary practice. In 2008, places (including cities, towns and rural communities) were invited to bid for ZWP status; the successful applicants were then expected to become exemplars of good environmental practice on all waste issues. Participating places would be asked to fulfil a pathfinder role in identifying the barriers and illustrating solutions to enable others to adopt the most effective approach. Some 6 places were selected from a total of 12 applications. The total funding was £70,258 with a mean of £11,709. The overall assessment was that the partnerships achieved very satisfactory results and in most cases met or even exceeded their objectives. The level of funding was way below the typical project funding for BREW projects at the time (>£30,000). A fundamental question is whether this was sufficient for ambitious projects to drive a new Waste Strategy Initiative? The success of the projects shows that large sums of public money are not always essential for the delivery of project based upon a bottom up approach led by a local partnership; creative ways are found to level in resource. To avoid public overload with too many initiatives the next stage for ZWP is to link with a number of new developments in England including Transition Town, Eco-Towns and Total Place to create a new acceptable brand image. Can ZWP uptake be encouraged in every Local Authority area of England? To promote ZWP a Certificated Standard was developed to confer accredited status on successful applicants. This was deemed vital for public acceptance. However, the present Standard needs to be quite radically revised to become more transparent. It is hoped that this will catalyse the uptake of ZWP by a high proportion of places in England in the next 5 years.

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