Summary Report

Barriers to recycling at home

A summary of the findings from an in-depth structured investigation of the barriers people encounter in recycling at home, and targeted ways these might be overcome.

WRAP helps individuals, businesses and local authorities to reduce waste and recycle more, making better use of resources and helping to tackle climate change.

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Executive summary

Four years ago WRAP (Waste & Resources Action Programme) launched Recycle Now – a consumer facing campaign to encourage more people to recycle more things more often. Through a national advertising and PR campaign Recycle Now has achieved numerous successes including increasing the proportion of committed recyclers in England to 64% of adults, achieving a brand recognition rate of 65% and generating substantial positive media coverage in national and consumer press. In addition to national activity the campaign has also supported local authorities and others in the use of the Recycle Now iconography. Currently 90% of local authorities in England use the Recycle Now iconography and it will be at the heart of a new on pack labelling scheme due to be launched in Autumn 2008.

At the same time we know that access to recycling facilities has never been better; nine out of ten households now have a kerbside collection scheme and recycling rates have increased from 23% in 2004/2005 to 33% in 2008.

Recycling has now become a mainstream activity with more people claiming to recycle than ever before. However national targets for recycling will require even more people to recycle and everyone to recycle more of their waste. To achieve this we now have to take the campaign to the next level; addressing specific barriers and helping local authorities do the same... This research was commissioned to help us both define the barriers people have to using their recycling facilities to the optimum level and develop a model to help us target messages effectively.

M·E·L Research was commissioned by WRAP in the autumn of 2007 to explore people's barriers to recycling at home. The objective of the research was to generate a more rigorous, detailed and in-depth understanding of what prevents householders from recycling or recycling more than they could. The intention of the research was to assist WRAP's consumer campaign Recycle Now in developing more effective ways of encouraging householders to recycle more things more often. The work involved three stages:

- developing a conceptual framework for investigating the various barriers to recycling, drawing on the evidence of recent published literature;
- undertaking qualitative depth interviews with 73 householders to explore barriers in detail; and
- carrying out a quantitative household survey with 1,512 householders drawn from a sample of nine local authorities in England, regionally representative and covering a cross section of three recycling collection regimes – weekly residual and weekly recycling; weekly residual and fortnightly recycling; and alternate weekly collection of recyclables and residual waste.

The research has led to some important fresh thinking about how different population groups might be engaged more effectively by recycling campaigns especially at more local level. It has also clarified that four very different types of barrier exist:
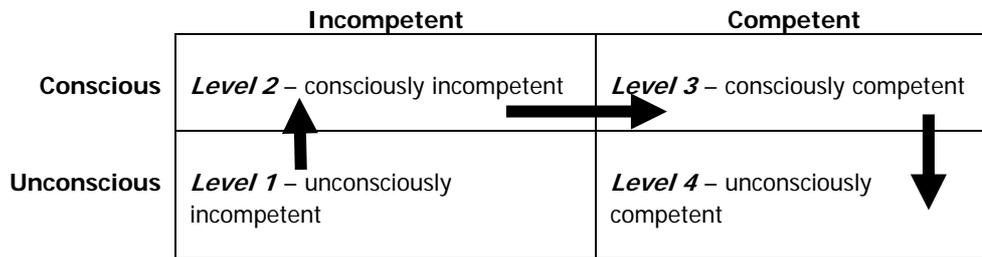
- situational barriers including not having adequate containers, a lack of space for storage, unreliable collections, unable to get to bring sites;
- behaviour, for example not having the space or systems in place in the home to recycle, being too busy with other preoccupations, difficulties in establishing routines for sorting waste and remembering to put it out;
- lack of knowledge such as knowing what materials to put in which container, and understanding the basics of how the scheme works; and
- attitudes and perceptions such as not accepting there is an environmental or other benefit, being resistant to householder sorting or not getting a personal motivational reward from recycling.

Very different messages and operational actions are needed to respond to these wide ranging barriers. Local authorities need to understand the prevalent barriers amongst the sub-groups in their population and develop services and communications strategies that are appropriate to addressing these barriers. Some interventions will be operational (service improvement) others about information and practical advice about how to use the scheme, and others motivational; showing why participation is worthwhile. In order to select the most appropriate intervention for a given audience, a clear analysis of the prevalent barriers is required.

The research has generated an important new approach to thinking about the most effective messages for communicating with these population segments. The qualitative research has shown that recycling behaviour can be understood in relation to the established 'competences' learning model (deriving from Dreyfus and Dreyfus 1986) illustrated in Figure 1 below. Efforts to improve people's recycling performance have much in common with

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efforts to improve competence in undertaking other desired behaviours. As people learn 'the system' they move from 'unconsciously incompetent' (not aware, don't care) to eventually reaching 'unconscious competence' (embedded systematic routines that can be carried out without conscious effort).

Figure 1: Competences learning model

	Incompetent	Competent
Conscious	*Level 2* – consciously incompetent	*Level 3* – consciously competent
Unconscious	*Level 1* – unconsciously incompetent	*Level 4* – unconsciously competent

Interpreting recycling behaviour with reference to this model helps to explain the different barriers people encounter, which are dependent on their existing level of competence. Further analysis of the quantitative survey has also generated a deeper insight into the 'committed recycler' section of the population. Recycle Now has been strongly geared toward increasing the committed recycler fraction of the population and this remains a core business performance indicator for WRAP in the Business Plan to 2011. The research has, however, revealed that people qualifying as committed recyclers under the existing definition, still encounter barriers to recycling as much as they possibly *could* recycle. In fact there are specific barriers that only become apparent to people once they have attained the attitude and behaviour status of a committed recycler. If the behavioural outcome of recycling communication initiatives is to help people 'recycle more things more often' it is clear from this research that a significant benefit can result from targeting further improvements within the committed recycler sector.

To highlight this, we have run an enhanced analysis of the data (as detailed in the full research report) by creating a defined sub-set within the committed recycler category – to create a 'super-committed recycler' group. These are people who give the top category response only to the three committed recycler questions described above (i.e. recycling is very important to me, I recycle everything I can and I recycle even if it requires additional effort). The research results, which have not been re-weighted to the national profile of all adults, show that four categories of recycler can be quantified as follows:

- non-recyclers (admit to not recycling at all) - 6%;
- non-committed recyclers - 23%;
- general committed recyclers - 41%; and super-committed recyclers – 30%

Thus the committed recycler group in this survey (71%, un-weighted data) was further divided into 30% super-committed and 41% general committed. Analysis of the barriers people experienced, demonstrated that some 30-40% of general committed recyclers faced barriers that, if overcome, could allow them to recycle more things more often. Even amongst the super-committed group, some 10-25% experienced barriers that, if overcome, could enable them to recycle more things more often.

From this evidence, and drawing on the competences model, we have proposed that initiatives to overcome barriers to recycling should be approached with consideration of 'seven levels of recycling competence', shown in Table 1 below. This simple model sets out a whole spectrum of competence, ranging from Level 1 (unconscious incompetent, where recycling is simply 'not on people's radar') through intermediate levels where people are struggling to do what is required, to the highest Level 7; a state of ideal competence summed up as the perfect or 'complete' recycler. Efforts to move people up from level to level, towards ever higher degrees of competence, involve helping overcome the barriers that lie between the different levels. These barriers may be situational, behavioural, knowledge or attitudinal, at any level, as the full research report sets out.

Table 1 also shows the extent to which the majority of the public, who now qualify as 'committed recyclers', still face barriers that prevent them recycling more things more often. The research summarised here shows clearly that it would be wrong to think that getting people to be 'committed recyclers' equates to a job done. The committed recycler group remains a fruitful target for initiatives that further remove barriers to more recycling. Indeed, this sector of the population may produce greater yield, in terms of increased waste diversion per unit of promotional effort than spending resources on the relatively small minority of current non-recyclers.

The full research report on this work presents a statistical analysis of the prevalence of up to 27 specific categories of barrier to recycling, and provides a comprehensive basis from which local authorities might target the specific barriers most prevalent in their local area grouped systematically under the situational, attitudinal, knowledge and motivational headings described earlier. The headline findings from the statistical analysis show that for current recyclers (94% of the sample) there are significant barriers that prevent them recycling as much as they could. For example:

Situational barriers:

Current recyclers say they would recycle a little or a lot more if they had:
- Collections of a wider range of materials (52%).
- Bigger containers (23%).
- More containers (20%).
- More space to store their container (19%).
- More frequent collections (18%).
- Containers easier to move (16%).

Behaviour barriers:

Current recyclers nevertheless still sometimes or often:
- Bin things because they are not sure if they can be recycled (48%).
- Throw recyclable bathroom wastes in the residual bin (41%).
- Put things in the recycling even if they're not sure they can be recycled (36%).
- Forget to put out the recycling because they are not sure of the collection day (33%).
- Bin things because their recycling container is full (21%).
- Bin things rather than cleaning them for recycling (19%).

For most recyclers (95%) recycling has become part of the 'everyday household routine'. However, over half (53% found it harder recycling at Christmas, 16% in the winter generally, and 8% on holiday or in the summer generally, They are also put off a little or a lot by:
- Fear of identity theft (16%).
- Having to store recyclables (12%).
- Having to clean them (7%).

Knowledge and understanding:

Less than half the sample as a whole (48%) understood 'very well' what they are supposed to use their recycling containers for. About a third of recyclers said it would increase their recycling if they had better information about their recycling services. Some recyclers also said that Council information had not helped them:
- Understand their local recycling scheme as a whole (21%)
- Understand the real benefits of recycling (12%)
- Knowing what can and can't be recycled (12%)
- Knowing when the collection service operates (5%).

Attitudes and motivators:

The vast majority of recyclers (90%), say they are 'happy to be doing their bit for the environment' and 69% say they feel 'good about themselves' when recycling. However 29% feel they are just 'doing it because the Council is telling us' and 17% 'do it because everyone else is doing it'.

Recyclers would still be encouraged to recycle more by:
- Seeing the practical impact of recycling in their local area (86%)
- Feeling more appreciated by the Council (52%)
- Receiving an incentive for recycling (56%)
- Being fined for not recycling (34%).

Overall if asked which of three reasons best sums up why they recycle, 59% said 'because they believe in it', 27% say 'it's part of the everyday household routine, and 14% 'because the Council asks them to do it'.

For declared non-recyclers (only 6% of the sample) their main reasons for not recycling at all were that is easier to throw everything in the bin (46%), not seen any information about recycling (44%), not knowing what can and can't be recycled (32%), and having nowhere to store recyclables (also 32%).

Table 1: WRAP recycling competence levels, relationship to 'committed recycler' status, and links to Defra pro environmental behaviour segments. Recycling rate in column 1 is an indication of the likely proportion of the household's recyclable waste that they actually recycle at a given competence level.

Recycling rate	Recycling Competence level (1 to 7)	Description	WRAP Committed recycler status	Population %	7. Honestly Disengaged	6. Stalled Starters	5. Cautious participants	4. Sideline supporters	3. Concerned consumers	2. Waste watchers	1. Positive greens
0%	1. Recycling unaware	Just not on their radar, no idea about it at all	Non recycler	} 6%	✓	✓					
0%	2. Aware but inactive	Knows about it but have not seriously contemplated doing it	Non recycler		✓	✓					
Sporadic	3. Contemplated but not engaged	May have dabbled, possibly elsewhere, may do occasionally, drifted back	Recycler but not 'committed'	} 23%		✓	✓				
A little	4. Unreliable	Recycle but sometimes forget, sometimes miss out, recycle opportunistically not regularly	Recycler but probably not 'committed'				✓	✓	✓		
A fair amount	5. Trying their best	Usually take part, recycle 'staple' items like newspapers but confused about other items	Committed recycler	} 41%				✓	✓		
A lot	6. Broadly competent	Reliable and regular but may still miss out some materials or collections	Super-committed recycler						✓	✓	
100%	7. The complete recycler	Recycle all available items of all recyclable materials all of the time	Super-committed recycler	} 30%						✓	✓

Links with Defra's environmental behaviour segments

Defra has recently published a major review of pro-environmental behaviours (Defra, 2008) and has set out a broad cross-cutting strategic framework for developing pro-environmental behaviours. The Defra research is shaped around seven population segments broadly ranked according to their ability and willingness to change towards more pro-environmental behaviours such as eating more local and seasonal foods, installing home energy insulation and increasing recycling. The specific research reported here on barriers to recycling at home, can be seen as focussing on a detailed sub-element of Defra's wider framework. For this reason we have looked at the extent to which the seven recycler competence levels produced in this project, map onto Defra's seven environmental behaviour segments.

Table 1 shows how the two classifications map across to each other. It can be seen that the WRAP recycling competence levels tend to relate to specific sub-groups of Defra pro-environmental behaviour segments, a finding which demonstrates the complementary nature of the two approaches.

- Working our way up the recycler competence levels, the Defra 'Honestly disengaged' segment are people that make no alterations to their life to help the environment and these can be linked broadly to competence levels 1 and 2 established in this research, firstly, the 'Recycling unaware' who have no idea about it at all and also 'Aware but inactive' who know about recycling but do not contemplate doing it.
- The 'Stalled starters' from the Defra framework are broadly those who do not know too much about climate change. This can be linked to those that fall within the 'recycling unaware' competence level 1 (not on their radar) and also 2 and 3.
- The 'Cautious participants' carry out some pro environmental actions who are similar to the 'contemplated but not engaged category' in this barriers research as they may have dabbled in recycling and may still occasionally recycle.
- Defra's 'Sideline supporters' who forget to carry out pro environmental actions can be linked to the 'Unreliable' competence level from the barriers to recycling who also tend to forget to recycle sometimes.
- The 'Concerned consumers' segmentation feel they do more for the environment than others and that can be linked to the 'Try their best' recycling competence level 5, who are people who recycle the staple items such as newspapers.
- The 'Waste watchers' from the Defra segmentation are those who feel they should think about what they are doing and using during life that can be linked to both the 'Broadly competent' level 6 who are reliable recyclers and 'The complete recycler' level 7 who recycle all available items.
- Finally Defra's 'Positive greens', who do as much as they can to limit any impact on the environment, are clearly linked to the 'The complete recycler' competence level 7 from this research.

In summary, although these two classification schemes have been developed independently, and the recycling competence levels have been constructed specifically and only around research evidence on barriers to recycling at home, it is clear that the two behaviour sets map well to each other.

There are two implications from this. Firstly, those broader strategic actions taken nationally (in line with the Defra framework) are also likely to connect relatively well to people at the respective recycling competence level shown in Table 1. Secondly, the initiatives proposed here for moving people successively up the steps in the recycling competence ladder, could also generate positive secondary environmental benefits (e.g., in energy reduction) at the broader scale of the Defra work.

Both the Defra document (Defra, 2008) and the new WRAP Business Plan (2008-2001) emphasise the need to generate mutual synergy between the delivery partners in this field, and the research reported here gives positive evidence of a practical context in which these benefits might be achieved.

Competence levels and recycling communications messages

Based on the findings of the research, we have summarised the typical profile of consumers at the seven competence levels, and the different kinds of communications messages that might be relevant if targeted at people in each of the basic seven stages of recycling competence. See Table 2 below.

Acorn profiling has been used to understand the segments identified and put them into a demographic profiling context. It is worth remembering that whilst this is a useful tool for profiling these segments it is not a perfect science and representatives from all segments will be found in the groups used by Acorn. However it does give a broad indication of the *likelihood* of finding these barriers amongst these segments, but should not be seen as a replacement for local knowledge and research and should be used in conjunction with other communication planning tools, such as WRAP's low performance area toolkit.

Table 2: Summary of consumer profiles for each of the seven stages of recycling competence

Recycling Competence Level (1 to 7)	Description	Profile – tend towards having one or more of the characteristics below	Main messages and actions (see Figure 2)
1. Recycling unaware	Just not on their radar, no idea about it at all	**ACORN**: 2, 4 **Age**: 18-24 **Property**: Flats, terrace, maisonette **Lifecycle**: Young single, no kids yet; single parent	a), b), c)
2. Aware but inactive	Know about it but have not seriously contemplated doing it	**ACORN**: 2, 4 **Age**: 18-34 **Property**: Flats, terrace, maisonette **Lifecycle**: Young single, no kids yet; single parent	a), b), c), d)
3. Contemplated but not engaged	May have dabbled, possibly elsewhere, may do occasionally, drifted back	**ACORN**: 2, 4, 5 **Age**: 18-34 **Property**: Terrace, bungalow **Lifecycle**: Solitary retiree, single parent	a), b), c), d), f)
4. Unreliable	Recycle but sometimes forget, or miss out, recycle opportunistically not regularly	**ACORN**: 3, 5 **Age**: 35-54 **Property**: Bungalow, terrace, semi- **Lifecycle**: Solitary retiree, solitary adult worker	a), b), c), d), e), f)
5. Trying their best	Usually take part, recycle 'staple' items but confused about other items	**ACORN**: 3, 5, 2 **Age**: 35-54 **Property**: Semi-detached, bungalow **Lifecycle**: Full nest couple with kids, solitary retiree	a), c), d), e), f)
6. Broadly competent	Reliable and regular but may still miss out some materials or collections	**ACORN**: 1, 2 **Age**: 55 and above **Property**: Detached, semi-detached **Lifecycle**: Empty nest, couple with no kids	a), c), d), e), f)
7. 'The Complete Recycler'	Recycle all available items of all recyclable materials all of the time	**ACORN**: 1 **Age**: 55-64 **Property**: Detached **Lifecycle**: Empty nest, children living elsewhere	a), d), e), f)

The following section, and Figure 2 at the end of this report, shows in more detail the links between recycling competence levels, messages and communication methods. Using the competence levels arising from this research, the messages are developed to respond to the barriers identified in the qualitative research, and the communications methods, suitable for the delivery of the messages, are shown in the body of the chart. The shaded areas give an indication of the relevance of the messages across the various competence levels.

Before explaining the barrier – message links in detail, it is important to bear in mind that this research has shown that good communications and behaviour motivation cannot overcome the barriers simply caused by poor facilities and poor service standards.

■ It is important to understand that only by addressing the negative situational barriers will recycling become habitual, in particularly amongst the lower competence levels. It is also critical that services are provided efficiently and that requests and complaints are dealt with promptly. Any failure of service, or inadequate provision of services, provides people with an excuse for not recycling.

■ Consideration must be given to the type of service provided; there is a world of difference between a multi-bin kerbside scheme in a suburban area and that provided to high rise city centre tenanted flats – in all cases it must be relevant, appropriate and easy to use.

■ Communication in itself cannot and will not cause behavioural change by persuading people to use recycling services which are difficult to use, inappropriate or badly run. After all, where there is a choice, no householder will continue to purchase bad products or services however good the promotion.

Competence levels, messages and methods

Different messages and methods of communication are needed for different levels of competence but these overlap and it would be wrong to assume there will ever be a single 'silver bullet' message for any one competence level. For example, the recycling unaware must have the concept of recycling and its benefits explained to them but it would be a missed opportunity if they were not told where and how they can recycle.

It is also highly unlikely, that within any targeted geographical area, the level of competence will be exactly the same for all households and unless highly sophisticated identification methods are used, messages encompassing a number of competence levels will have to be developed.

The following section explains the messages a) to f) referenced in Table 2 and associated communications methods most likely to be effective in communicating with households at the different competence levels. These targeted communications methods are in addition to the continuing basic universal communications requirements - ensuring that helpline and front-line staff are fully engaged, the council website is up to date and easy to use, and that all council members and staff are aware of the council's recycling and waste collection services.

Instructions – Basic how-to 'user guide' information (Message a)

Explaining what services are available and how they should be used are messages which must be treated as a situational issue and part of service delivery. All householders, at whatever competence level must be provided with instructions on how to use the service; there should be no reason why this information is not easily available.

Communication methods should be predominantly direct mail and other material which will provide a permanent reminder in the home.

Explanations - What is recycling? (Message b)

'What is recycling' messages and their benefits focus on competence levels 1 – 4. The more 'intense' methods of communication such as door knocking and local events should be focused on areas where categories 1 and 2 are concentrated, coupled with outdoor advertising in the local area to raise awareness of recycling.

This messaging should clearly link with national newspaper and television advertising to develop a coherent and recognisable campaign with the aim of creating behavioural change.

Dispelling the myths - education and information (Message c)

Messages to dispel recycling myths and increase understanding should be focused around competence level 4. There are many myths about recycling and a lack of understanding around why recycling is a good thing and waste disposal to landfill is harmful. The lack of understanding can relate to simple operational issues or more complex issues such as the relationship between sending putrescible material to landfill and climate change. Messages should be tailored to suit the competence levels being targeted.

These messages should be provide in newsletters and council newspapers which reach all households. Strong PR should also be employed to get local press on-side.

How it works - What actually happens to the recyclables (Message d)

Many committed recyclers seem to take a blind leap of faith as to what happens to the material they put out for recycling. This should not be the case and appropriate messages should be put out to explain where their recyclables are made into new products.

The communication method can range from well developed lorry livery and newsletters explaining where the locally recycled materials are reprocessed and what local products are made from them (such as local park benches made from recycled plastics), through to national television promotion informing householders of the national picture.

Rewards - Feedback and thanks (Message e)

All committed recyclers (competence levels 5 – 7) need to know how well they are recycling and how their district and the UK compares to other parts of the country and Europe. They also need to be thanked for participating in the council collection schemes, to reinforce motivation and prevent people flagging through lack of appreciation for their efforts.

Some limited feedback and thanks should be provided in instructional leaflets such as the annual collection calendar. More detailed information should be provided in newsletters and council newspapers which reach all households, and Household Recycling Centre signage. Strong PR should also be employed to reinforce this message with practical local 'human interest' stories commending people and groups who have achieved high recycling performance.

Saving cash – Cost effectiveness of recycling (Message f)

The 'cost effectiveness of recycling' message applies perhaps more to the committed recyclers but also has a significant relevance to the less competent recyclers. The competent recyclers want to understand the cost and financial benefits of recycling, less competent recyclers should be made more aware of the cost of recycling and the reduction in the local authority income stream if they do not recycle. There could be a simple local 'cost benefit statement' highlighting the equivalent value of recycling – for example that the costs saved equate to 'x new litter bins' in the area. Myths emerging that councils profiteer from collecting recyclables should also be actively dispelled through effective and swift media rebuttal.

Information should be provided in newsletters and council newspapers which reach all households. Strong PR should also be employed to drive the message home of cost of services and income streams from recyclates. Messages should also be employed in door knocking exercises when addressing householders with lower competence levels.

Summary

- This research has shown the need for customisation and targeting of recycling promotional messages so that they link better to the different barriers faced by different segments of the population.

- Barriers can be usefully divided into situational, behavioural, cognitive and attitudinal. Promotional communications initiatives can address the latter three barriers but should not be applied in isolation from steps to make the practical (situational) environment conducive to recycling.

- People's journey along the road to becoming the ideal or 'complete' recycler involves them in a 'learning and competence' process.

- Helping people along this journey involves targeting messages that assist people in making that step up to the next level of competence.

- WRAP's committed recycler metric is useful in highlighting the barriers faced by non-recyclers and recyclers not yet reaching the 'committed recycler' status.

- However, it has also highlighted the barriers that nevertheless remain within the committed recycler group. Committed recyclers can still progress and recycle more things more often.

- We have proposed sub-dividing committed recyclers into standard committed and super-committed, so that the different forms of barrier relating to these two sub-groups can be more effectively targeted.

- It is evident that even amongst super-committed recycler population there is still around a fifth who believes they could recycle more things more often.

- We have outlined the types of people commonly found at the different levels of competence, and the types of messages and communication media most suited to supporting people in making that next step up.

Local Authorities can apply to WRAP for support and advice on collection programmes and local communications. To apply please email lgs@wrap.org.uk or visit http://www.wrap.org.uk/local_authorities/local_authority_support/index.html

Figure 2: Relevance of each communications message and media, to people at each Recycling Competence Level

Recycling Competence Level (1 to 7)	Message / Description	a. Instructional - What, When and How to recycle. Details of Services and how to use them	b. What is recycling? Why is the council asking you to do it? What are the benefits to individuals & environment	c. Dispelling the myths - education. What is good and bad in recycling and waste disposal.	d. What happens to the recyclables that are collected	e. Feedback and thanks - How our district is doing compared to the rest of the UK and Europe.	f. What is the cost of recycling, the cost of waste disposal and LATS fines/allowances
1. Recycling unaware	Just not on their radar, no idea about it at all	**Communications methods:** • **Instructional leaflets** • **Collection calendars** • **Bin/box stickers** • **Contamination tags**					
2. Aware but inactive	Know about it but have not seriously contemplated doing it		**Communications methods:** • **Door knocking with leaflets** • **Targeted local displays/events** • **TV and local radio advertising** • **Local and national newspapers** • **Outdoor advertising**				
3. Contemplated but not engaged	May have dabbled, possibly elsewhere, may do occasionally, drifted back						
4. Unreliable	Recycle but sometimes forget, sometimes miss out, recycle opportunistically not regularly			**Communications methods:** • **Leaflets** • **Newsletters** • **PR** • **Council newspaper** • **Local press** • **National TV documentaries**			
5. Trying their best	Usually take part, recycle 'staple' items but confused about other items				**Communications methods:** • **Vehicle livery** • **PR** • **Newsletters** • **Council newspaper** • **Advertorials** • **Events/displays**		
6. Broadly competent	Reliable and regular but may still miss out some materials or collections					**Communications methods:** • **PR** • **Newsletters** • **Council newspaper** • **Advertorials** • **Events/displays**	
7. 'The Complete Recycler'	Recycle all available items of all recyclable materials all of the time						**Communications methods:** • **PR** • **Newsletters** • **Council newspaper** • **Advertorials**

References

Defra (2008). A Framework for Pro-environmental Behaviours, January 2008. Department for Environment, Food and Rural Affairs, London.

Dreyfus H.L. and Dreyfus S.E. (1986). Mind over Machine: the power of human intuition and expertise, Oxford; Basil Blackwell.

Appendix A: Summary of Recycling Barrier Categories

Twenty seven specific barrier types have been defined in total, under the four principal categories:

Situational Barriers

S1   Household believes it is not provided with service, container or ways to get one.
S2   Household has no container (missing, lost).
S3   Limited, sporadic or missed collection services.
S4   Limited range of materials collected.
S5   Physical problems in storing container (lack of space, unsuitable for property).
S6   Physical problems moving container (too heavy, cumbersome).
S7   Unsuitable container for the purpose (too small, ugly, hazardous).
S8   Counteractive appeal of the one-route residual bin.
S9   Transport problems in accessing bring sites.

Household Behaviour and Organisational Barriers

B1   Basically not on our lifestyle radar.
B2   Too busy, all too much effort and bother.
B3   Household not organised enough to be able to separate waste.
B4   Not in the habit or no regular domestic routine.
B5   Part of the throw-away behaviour society not brought up to think about recycling.
B6   Object to hygiene, safety and cleanliness requirements.

Knowledge and Awareness Barriers

K1   Find the whole scheme too confusing, don't understand the system as a whole.
K2   Lack of understanding of, or confused about, what items go in which container.
K3   Lack of knowledge of what items are recyclable or residual, for each material collected.
K4   Poor awareness of, or confused about which day or week to put out what.

Attitudinal and Motivational Barriers

A1   Believe it's the Council's problem, not doing their work for them.
A2   Believe it's a retailer/industry problem, not doing their work for them.
A3   Object to being told by the Council what to do, or to supporting the Council.
A4   Object to attitudes of collection crew or enforcement officers.
A5   Not convinced, or aware, of physically what is done to re-use collected materials.
A6   Not convinced, or aware, of what good it does or what difference it makes.
A7   Don't get positive motivational reward from recycling.
A8   Don't feel negative or guilty about not recycling.

Appendix B: ACORN Categories

ACORN stands for 'A Classification of Residential Neighbourhoods' and is a three-tier taxonomic classification scheme developed by the consumer research agency CACI. The table below shows a simple verbal description for the five principal ACORN Categories 1 to 5, and the 17 subsidiary ACORN Groups organised within the five primary Categories.

ACORN Categories	ACORN Groups
1 - Affluent Achievers	1.A - Wealthy Executives 1.B - Affluent Greys 1.C - Flourishing Families
2 - Urban Prosperity	2.D - Prosperous Professionals 2.E - Educated Urbanites 2.F - Aspiring Singles
3 - Comfortably Off	3.G - Starting Out 3.H - Secure Families 3.I - Settled Suburbia 3.J - Prudent Pensioners
4 - Modest Means	4.K - Asian Communities 4.L - Post Industrial Families 4.M - Blue Collar Roots
5 - Hard Pressed	5.N - Struggling Families 5.O - Burdened Singles 5.P - High Rise Hardship 5.Q - Inner City Adversity

www.wrap.org.uk/barrierstorecycling