Ealing's Local Agenda 21 Pollution & Public Health Project Group

THE EXTENT OF HARD SURFACING OF FRONT GARDENS IN THE LONDON BOROUGH OF EALING

REPORT ON A COMMUNITY SURVEY RESEARCH PROJECT

November 2005

CONTENTS

1. INTRODUCTION

This report presents the results of a survey of the hard surfacing of 7,675 front gardens of private dwellings in a representative sample of residential roads in the London Borough of Ealing, conducted between March and September 2005.

Why the survey was conducted

There is growing realisation that the loss of front gardens to hard surfacing in suburban areas such as the London Borough of Ealing is causing a wide range of environmental and societal problems.

Ealing's Local Agenda 21 Pollution & Public Health Project Group has been concerned about this for some years. In 2003, with the support of Ealing's LA21 Natural Environment & Biodiversity and Energy & Built Environment Project Groups, we obtained a small grant from Ealing Council to conduct some research into what was known about the issue. One of the key findings of this research[1] was that very little was known about the scale of the problem or the amount of hard surfacing of front gardens that actually exists.

The Group therefore decided to conduct a survey to enable the extent of hard surfacing in the front gardens of the London Borough of Ealing to be calculated reliably. This involved drawing a random sample of 10% of the borough's residential roads, asking volunteers to record the amount of hard surfacing and other information about the front gardens in the sampled roads, and then matching, on a garden by garden basis, the resulting data to the surface area of the front gardens, derived from street plans held in Ealing Council's 'Planweb' Geographical Information System (GIS) database.

Data for the 7,675 front gardens have then been grossed up, on a ward by ward basis, to the estimated total number of front gardens in the borough. Driveways have been excluded throughout. Further details of how the survey was conducted can be found in Appendix 1.

Acknowledgements

A large number of volunteers, many motivated by concern about increasing loss of the borough's traditional front gardens and green-ness, have contributed a great deal of time and effort to this survey. We are extremely grateful to all of them for their hard work - without it, the survey could not even have been contemplated.

- Kerry Ives, Juraj Zemlicka, Sandra & Colin Andrews, Ann Chapman, Glyn Hatherall, Mike Tyzack, Tony Miller, Fiona Kent, Virginia Fassnidge, Ron & Betty Simpson, Nicola Harper, Tom Berry, Kay Garmeson, Terry & Irving Jones, Robert Williams, David Strachan, Jennifer Donnithorne, Julia Welsh, Richard Williams, Graham Fowler, John, Laura & Ainsley Gilbert, Tom Morrisey, Derek Bowyer, Ron Leach, Julian Maw, Sue Elliot, Andrew & Sally Kelly, Lorna Dodd, Sarah Edwards, Mary Bolton, Ingrid Williams, Alison & Ian Bowyer and family, Matty Bradley, Claire Smith and other staff and volunteers at A Rocha UK, Simon Rowley, Jenny Davis, Steve Fabian, Vishal Pankhania, Marion Taylor, Claire Willcox, Brian Haylock, Peter Chadburn, Brian Graham, Alistair MacLachlan, Geraldine O'Neill, Francesco Fruzza, Toby Lovern, Maureen Carroll, Geoff Card & Tracey Moore, Susi O'Flynn and Jean Chennells took on the task of surveying the sampled roads. Several of them took on several batches of roads, including some of the longest roads in the sample.
- Andrew Lyon managed the extracting of front garden dimensions from the 'Planweb' GIS database, and he, Juraj Zemlicka and James Matthews extracted the data.
- John Eborall consolidated and edited the GIS data extracts.
- David Lomas, Barbara Trigg, Fiona Kennedy, Glenda Brooks, Ron & Betty Simpson, Christine Gratus, Nic Ferriday, Andrew Lyon, Kulvinder Panesar, Dominique van Dooren, Jane Neville, Mike

[1] "Hard Surfacing of Front Gardens: report on desk research", Pene Healey Associates for Ealing's Local Agenda 21 Pollution & Public Health Project Group (working with Ealing's Energy & Built Environment and Natural Environment & Biodiversity Project Groups), May 2004 (available on www.london21.org/ealingfrontgardens)

Tyzack and Anil Bhanot produced plans of their own and in some cases their neighbours' front gardens, from which the 'Ready Reckoner' was derived.

- Ross Jackson in Ealing Council's Electoral Registrations Office produced summaries of numbers of electors, properties and roads in each of the borough's electoral districts.
- Fiona Kennedy did exploratory analyses of the electoral register data, and Ken Baker advised on sampling.
- Kay Garmeson reviewed the draft report and made many constructive suggestions.
- Christine Eborall and Andrew Lyon were responsible for the overall management of the survey; Christine Eborall designed the survey and also wrote this report.

The survey was supported by a grant of £1,900 from Ealing Council's 2003-4 Main Fund to Voluntary Organisations. This sum was used for printing and mailing of survey materials to volunteers, and for data entry, matching and analysis, which were handled by Colin Richards and James Miller at Digitab Ltd. We are also grateful to Ealing Community Network for a grant of £400 which was used to support some of the GIS extracting work.

Two of Ealing's other LA21 Project Groups, Natural Environment & Biodiversity and Energy & Built Environment, supported our application for funds and made valuable contributions to the design and management of the survey.

In addition, our thanks are due to the editorial staff of the Ealing Gazette for publicising the call for volunteers in its pages and in those of its sister newspaper The Leader, and to the Selborne Society for allowing the project to be publicised at Perivale Wood Open Day in May 2005. We are also grateful to the London 21 Sustainability Network for providing the opportunity to download this report from its website www.london21.org.

The London Borough of Ealing: a short scene setter

For readers unfamiliar with the London Borough of Ealing the short introduction below may help to set the scene for the research findings.

An introduction to the London Borough of Ealing

The London Borough of Ealing is in the western part of Greater London, and with a population of over 300,000 is the third largest of the 33 London boroughs. Although officially an 'outer' London borough, it is one of several fairly densely populated 'middle' boroughs, sandwiched between the highly urbanised, densely populated inner London boroughs and the more spacious, less densely populated outermost ones.

The London Borough of Ealing was formed from the amalgamation of the Boroughs of Acton, Ealing and Southall, and for the purposes of planning and economic development is now divided into seven local areas: Acton, Ealing, Greenford, Hanwell, Northolt, Perivale and Southall.

Until the 1800s these were villages surrounded by market gardens, farmland and woodland. Development began with the building of two branches of the Grand Union Canal and then the Great Western Railway. The opening of the Metropolitan District Railway in 1879 triggered very rapid development of Ealing and Acton, and Ealing became know as 'The Queen of the Suburbs'. After the First World War extensive development of the areas to the west and north took place as more railways, and roads such as the A40, were constructed.

Consequently, the borough contains a very wide range of housing including large areas of Victorian villas, 1920s and 1930s development and more recent estates. It also has some substantial areas of open space including the Brent River Park and the Northolt & Greenford Countryside Park.

The population is very diverse both socio-economically and ethnically. There are areas of considerable affluence, notably in Ealing, but others of deprivation, particularly in Acton in the east and in Southall in the west of the borough, where there is a large Asian population.

2. EXECUTIVE SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

2.1 Summary

Amount of hard surfacing in the borough's front gardens

- There are an estimated 74,300 front gardens in the London Borough of Ealing, taking up a total surface area of 3,052,000 square metres (m^2). This is 5.5% of the total geographical area of the borough (55.37 square kilometres).

- Nearly two-thirds – 64% or 1,961,000m^2 – of the total area of front garden in the borough is covered with hard surfacing of some kind. This is 3.5% of the total geographical area of the borough, and nearly one and a half times the size of Hyde Park in central London.

- The average front garden is 68% hard surfaced. But this average hides a wide range.

    - A quarter (18,300) of the borough's 74,300 front gardens are completely (i.e. 100%) hard surfaced.
    - A further fifth (14,500) are nearly completely (90-99%) hard surfaced.
    - A total of 44,600, or six out of 10, have 70% or more of their area hard surfaced.
    - Only 21,200 (29%) have less than half of their area hard surfaced.
    - Just 12,300 (17%) have 'traditional' 20%-or-less hard surfacing – just a path to the front door and perhaps a narrow strip round the front of the house.

- Front gardens that are completely hard surfaced account for 637,000m^2 of hard surfacing, a third of the total front garden hard surfacing in the borough. Those that are 70% or more hard surfaced account for 1,547,000m^2, or nearly 80% of the total amount of front garden hard surfacing in the borough.

- Smaller front gardens are somewhat more likely than larger ones to be extensively hard surfaced, but there is a full range of degrees of hard surfacing in all sizes of garden.

- Area of the borough is a more important influence on the extent of front garden hard surfacing.

    - Front garden hard surfacing is most extensive in Southall, where an estimated 44% of front gardens are completely hard surfaced and over three-quarters are 70% or more hard surfaced.
    - In Greenford, Northolt and Hanwell a quarter of front gardens are completely hard surfaced and between a half and two-thirds have 70% or more hard surfacing.
    - In Acton 20% and in Perivale 16% of front gardens are completely hard surfaced, but more than half are over 70% hard surfaced.
    - Ealing has the lowest proportion of completely hard surfaced front gardens (14%), but around half are over 70% hard surfaced.

- Nevertheless, all areas of the borough also have 'traditional' less-than-20% hard surfaced front gardens. In Northolt and the northern wards of Ealing these account for over a quarter of all front gardens, and in Greenford a fifth.

Materials used for hard surfacing

- The hard surfacing materials most often found in the borough's front gardens are concrete, bricks or stone blocks, and various types of paving.

    - Nearly half (48%) of front gardens have at least some concrete, and in 26% it is the only hard surfacing material used.
    - A quarter (24%) have bricks or stone blocks; these are the only type of hard surfacing in 15% of gardens.

- A further 24% have rectangular, square or hexagonal paving, which is the only type of hard surfacing in 10%.
- Fourteen percent have crazy paving, 13% gravel, loose stones or slate chips, 12% quarry or ceramic tiles and five percent asphalt or tarmac.

- In terms of square meterage, however, there is more brick or stone block surfacing than concrete.
  - Brick or stone block surfacing accounts for an estimated 618,000m^2, 32% of the 1,961,000m^2 of hard surfacing in the borough's front gardens, compared with an estimated 615,000m^2 of concrete (31% of the total).
  - There is an estimated 257,000m^2 of rectangular, square or hexagonal paving (13% of the total), 242,000m^2 of crazy paving (12%), 125,000m^2 of asphalt and tarmac (6%) and 56,000m^2 of gravel and other loose stones (3%).

- Brick or stone block surfacing is also much more common than concrete and the various pavings in front gardens which are extensively hard surfaced.
  - In completely hard surfaced front gardens, an estimated 275,000m^2 is covered by bricks or stone blocks, compared with 182,000m^2 by concrete.
  - Similarly, in gardens which are nearly completely (90-99%) hard surfaced, there is an estimated 183,000m^2 of brick or stone block surfacing, compared with 154,000m^2 of concrete.
  - It is only in front gardens which are less than 70% hard surfaced that there is more concrete than brick or stone block surfacing.

- These findings, together with the fact that brick or stone block surfacing has only become popular fairly recently, corroborate the concerns of many people, that there is a trend towards hard surfacing a larger proportion of the front garden area than in the past.

Usage of hard surfacing

Parking provision

- Parking provision is a major reason why front gardens are being hard surfaced.
  - An estimated 31,200 front gardens, 42% of the borough total of 74,300, are likely to be being used for parking one or more vehicles.
  - Of these, an estimated 26,400 are accessible via a pavement 'crossover' or 'kerb drop' constructed to allow vehicles to cross the footway.
  - In the remaining 4,800, no such crossover is present but the front garden is still accessible to vehicle(s), suggesting that, overall, about six percent of the borough's front gardens could be being used illegally for parking.
  - This translates into an estimated 1,279,000m^2 of hard surfacing in front gardens in the borough that are used for parking.

- The extent to which front gardens are likely to be being used for parking varies by area:
  - In Greenford an estimated 60%, in Northolt 59%, in Southall 55% and in Perivale 51% of front gardens are likely to be being used for parking.
  - In the rest of the borough these proportions are lower: 36% in Ealing, 24% in Acton and only 18% in Hanwell. This is partly due to the sizes of the front gardens available for parking – in Hanwell the majority of front gardens are small, while in Greenford they are larger. Access to a range of public transport services is also likely to be a contributory factor.
- These findings are only partially explained by the lack of garages in the borough:
  - Only an estimated 14,300 properties with front gardens have garages. However, they are much more common in some areas, such as Northolt, Greenford and northern Ealing, than in other such as Hanwell and Southall.

- Having a garage does not save the front garden from parking. More properties with garages use the front garden for parking than do those without garages (a finding probably explained by properties with garages already having a pavement crossover and tending to have larger front gardens).

- The 167 roads surveyed provide some evidence that the greater the number of pavement crossovers in a road, the greater the number of front gardens likely to be being used for parking. This is probably due to there being fewer roadside parking spaces because of the presence of the crossovers, creating a 'domino effect' resulting in more and more front gardens being converted to parking.

- Information from other sources indicates that several other factors are contributing to increased pressure on the parking space available in the borough's residential roads. These are increasing population, more vehicles per household, larger vehicles (4x4s, SUVs), and the piecemeal introduction of Controlled Parking Zones, which has several consequences for front gardens.

- The front boundary structures of gardens – hedges, fences, walls, railings etc. – are casualties of front garden parking. Only a quarter of front gardens used for parking have all the front boundary structure in place, compared with 92% of those which are not used for parking.

Non-parking usage

- Many people assume that parking is the reason why front gardens are extensively hard surfaced. However, this is not necessarily the case.

    - 32,800 front gardens in the borough are completely or nearly completely (90+%) hard surfaced, but only 19,900 of these are likely to be being used for parking, leaving 12,600 – well over a third of them - which are not.

- Extensive hard surfacing not being used for parking is not entirely explained by size of garden:

    - Of the 12,600 90+% hard surfaced gardens not being used for parking, 8,900 are 25m^2 or less and therefore rather small for parking (although about 2,000 front gardens of this size are likely to be being used for parking).

    - But that still leaves 3,000 front gardens of 26-50m^2 and 700 over 50m^2, all of which are 90% or more hard surfaced and yet not likely to be being used for parking.

    - In Southall nearly half of the 6,300 front gardens not being used for parking are 90+% hard surfaced, a considerably higher proportion than elsewhere in the borough.

- The motives for covering front gardens with extensive hard surfacing other than for parking are unclear, although minimal maintenance, a presentable year-round look, a fashion for hard surfacing, contractors promoting hard surfacing, and lack of gardening tradition and different attitudes to the front garden in different parts of the community may contribute.

Reasons for concern

- Research from other sources shows that the hard surfacing of front gardens causes many detrimental effects both to the environment and to local communities. These include increased risk of flooding, pollution of local watercourses, increased urban temperatures, increased noise and air pollution and loss of vegetation, which in turn leads to loss of shade and cooling, loss of habitat, reduced CO_2 absorption, less attractive appearance and loss of character, and less opportunity for informal contact with neighbours while gardening.

- The use of front gardens for parking creates further problems, including more risks to pedestrians, pavement crossovers causing uneven pavements and loss of street trees, loss of roadside parking leading to a 'domino effect' as more people convert their front gardens to parking, and to faster traffic in roads freed of parked cars.

2.2 Conclusions, possible solutions and recommendations

Conclusions

- The survey described in this report is, we believe, the first comprehensive assessment to be conducted of the extent of front garden hard surfacing in an urban area in England. As such, its findings deserve serious consideration.

- The survey has revealed that front garden hard surfacing in the London Borough of Ealing is widespread and extensive.

- Much of this is because front gardens are being turned into car parks. But significant numbers of front gardens are being extensively hard surfaced for other reasons. Our understanding of why this is happening is limited.

- The survey is a snapshot, so we cannot say for certain that front garden hard surfacing in increasing. But the materials being used, the increasing pressures on parking, and the observations of many volunteers and other residents all point towards such a conclusion. Furthermore, there is no reason to believe that it will not continue – and at an accelerated rate – unless action is taken.

- Front gardens are important for many reasons, and their loss to hard surfacing is detrimental in many ways - to the environment, to the health and wellbeing of local people, and to the borough as a whole.

- We therefore believe that **urgent action** is needed to stop further destruction of the borough's front gardens.

Possible solutions

- There are many ways to discourage the hard surfacing of front gardens and encourage the restoration of those that have already been modified in this way. These include raising awareness of the problems, development and promotion of locally-suitable front garden designs that are easy to maintain, competitions for front gardens and front garden designs, a community gardening service, incentives to reinstate hard surfaced gardens, changing road layouts to accommodate more on-road parking, and better access to improved public transport.

- Prevention measures include changes to the permitted development legislation to require planning permission for pavement crossovers; refusal to allow pavement crossovers where on-road parking would be reduced; action against illegal crossovers and front garden parking, and preventing council tenants hard surfacing front gardens.

Recommendations

- In this context the five recommendations made by the London Assembly Environment Committee in its September 2005 report on the environmental impact of London's front gardens are fully supported, namely:

    - Awareness raising across London.
    - Analysis of patterns of front garden hard surfacing in London.
    - Recognising the strategic importance gardens in the Mayor's revised London plan, and encouraging London boroughs to do the same in their own development plans.
    - A policy seminar on the management of front garden parking.
    - Amendment to national permitted development legislation to allow local authorities to require planning applications for all proposed pavement crossovers.

- In addition, the following specific recommendations are made for the London Borough of Ealing:

Recommendations for Ealing: front gardens

- Following the legal precedent established by the London Borough of Kensington and Chelsea, Ealing Council should change, as quickly as possible, its current policy of allowing all except a minority of applications for pavement crossovers to one of refusing all applications where the amount of on-road parking will be reduced. This will stop the 'domino effect' setting in, and make a major contribution to halting the conversion of front gardens for parking.

- Following this policy change, enforcement measures should be taken on the 5,000 or so illegal pavement crossovers in the borough.

- Research should be conducted to examine why so many of the borough's front gardens are being extensively hard surfaced for reasons other than parking, and explore what can be done to change attitudes and achieve the same goals in a more appropriate and acceptable way.

Back gardens

- Although not covered by the survey due to the greater difficulty and cost of gathering the relevant data, extensive hard surfacing of **back** gardens in the borough is also giving increasing cause for concern.

Recommendation for Ealing: back gardens

- The extent of hard surfacing in back gardens needs to be established as a matter of urgency, so that the relevant authorities can assess how serious the problem is and what needs to be done about it.

3. THE SURVEY FINDINGS

This section summarises the findings of a survey of 7,675 front gardens of private dwellings in a randomly selected sample comprising 10% of roads in the London Borough of Ealing, conducted between March and September 2005. For each garden, information about the extent and nature of the hard surfacing and its use, derived from observations made from the pavement, has been matched with its area, in square metres (m^2), derived from a GIS database.

The data have then been grossed up, on a ward by ward basis, to the estimated total number of front gardens in the borough. Because they are estimates, numbers of front gardens have been rounded to the nearest 100, and square metres to the nearest 1,000. Because of this, numbers in tables may not sum to totals.

The survey covered the front garden area only. Driveways, which are usually hard surfaced, are not included.

3.1 Numbers and sizes of front gardens in the London Borough of Ealing

There are an estimated 74,300 front gardens in the London Borough of Ealing, taking up a total surface area of 3,052,000 square metres (m^2). The total geographical area of the borough is 55.37 square kilometres (55,370,000m^2), so front gardens account for 5.5% of the borough's total area.

Individually, front gardens in the borough are fairly small. The great majority (78%) are 50m^2 or less in area. Almost half (47%) are between 26m^2 and 50m^2, and nearly a third (31%) are 25m^2 or less – see table below.

Estimated numbers and total area of front gardens in the London Borough of Ealing, by size of front garden

Size of front garden (m^2)	No. of front gardens	*Share of borough total (%)*	Total front garden area (m^2)	*Share of borough total (%)*
Less than 12	2,300	*3*	21,000	*1*
12 – 25	20,500	*28*	361,000	*12*
26 – 50	35,100	*47*	1,309,000	*43*
Subtotal: 50 or less	57,900	*78*	1,691,000	*55*
51 – 100	13,000	*18*	846,000	*28*
101 - 200	2,800	*4*	372,000	*12*
More than 200	500	*1*	144,000	*5*
Borough total	**74,300**	***100***	**3,052,000**	***100***

Front gardens of 12-25m^2 or less are typically found in small terraced houses. Those of 26-50m^2 are characteristic of larger terraced and smaller semi-detached houses. Those of 51-100m^2 are typical of larger semi-detached houses, corner or long plots and some detached houses. Front gardens over 100m^2 are generally those of detached houses, although some long and corner plots can reach this size.

3.1.1 Numbers and sizes of front gardens in the different areas of the borough

The 23 wards of the London Borough of Ealing are grouped into seven local areas: Acton, which consists of four wards, Ealing (six wards), Greenford (three wards), Hanwell (two wards), Northolt (two wards), Perivale (one ward) and Southall (five wards). These areas differ in size, proximity to major roads and sources of public transport, and in density and types of housing. These differences are reflected in their front gardens.

Over a quarter of the borough's front gardens are in the Ealing area. It has nearly 20,000 (27% of the total). There are about 14,000 in Southall, 12,000 in Acton and 10,000 in Greenford. In each of the three remaining areas, Hanwell, Northolt and Perivale, there are fewer than 10,000 front gardens (see table below).

Ealing's front gardens also account for the largest surface area: nearly 1,000,000m^2, which is a third of the borough's total front garden square meterage. Southall and Greenford each have nearly 500,000m^2 of front gardens, Acton has 436,000m^2 and Northolt nearly 330,000m^2. On average, the largest front gardens are in the northern wards of Ealing and in Northolt, and the smallest in Hanwell, Southall and Acton (see table).

Estimated numbers and total area of front gardens in the London Borough of Ealing, by area of borough

Area of borough	No. of front gardens	*Share of borough total (%)*	Total front garden area (m^2)	*Share of borough total (%)*	Average front garden area (m^2)
Acton	12,200	*16*	436,000	*14*	36
Ealing (N)*	10,300	*14*	523,000	*17*	51
Ealing (S)*	9,600	*13*	446,000	*15*	47
Ealing (total)	19,900	*27*	969,000	*32*	49
Greenford	10,300	*14*	479,000	*16*	47
Hanwell	7,200	*10*	187,000	*6*	26
Northolt	6,500	*9*	329,000	*11*	50
Perivale	3,900	*5*	173,000	*6*	44
Southall	14,200	*19*	479,000	*16*	34
Borough total	**74,300**	***100***	**3,053,000**	***100***	**41**

* For analysing this survey the area of Ealing, which consists of six wards, has been split into two: Ealing (N) covers the three wards to the north of the Uxbridge Road and Ealing (S) the three to the south. See Appendix 1 for further details.

There are different sizes of front garden in the different areas of the borough. The table below shows that:

- **Small front gardens, of 12-25m^2 or less**, are the most common size in Acton, Hanwell and the southern wards of Ealing, where terraced housing is widespread. They are also fairly common in Southall, but less so in northern Ealing, and relatively infrequent in Greenford and Northolt.

- **The 26-50m^2 front garden**, characteristic of larger terraced and most semi-detached houses, is common in all parts of the borough and is the predominant size in Perivale, Greenford, Northolt, Southall and the northern wards of Ealing.

- **Larger front gardens, of 51-100m^2 or more** (typical of larger semi-detached houses, corner or long plots of various types of housing, and detached houses) are less common, but account for a third of front gardens in Northolt and over a quarter of those in Ealing and Greenford.

Numbers of front gardens by size of garden and area of borough

Area of borough	No. of front gardens	Size of front garden in square metres				
		<12 m^2	12-25m^2 (e.g. small terrace)	26-50m^2 (e.g. larger terrace/ most semis)	51-100m^2 (e.g. larger semi/ detached)	101m^2 or more
Acton	12,200	500	5,900	3,200	2,000	600
Ealing (N)	10,300	200	1,300	6,200	1,700	900
Ealing (S)	9,600	200	3,800	2,500	2,200	800
Ealing (total)	19,900	400	5,100	8,800	3,900	1,700
Greenford	10,300	300	400	6,800	2,300	400
Hanwell	7,200	500	3,900	2,300	400	-
Northolt	6,500	100	400	3,900	2,000	300
Perivale	3,900	-	100	3,100	700	-
Southall	14,200	600	4,700	7,000	1,700	200
Borough total	**74,300**	**2,300**	**20,500**	**35,100**	**13,000**	**3,300**
% of total	*100%*	*3%*	*28%*	*47%*	*18%*	*4%*

3.2 Overall area of front gardens hard surfaced

In terms of square meterage, nearly two-thirds – 64% or 1,961,000m^2 – of the 3,052,000 m^2 of front garden in the borough is covered with hard surfacing of some kind. This area of hard surfacing is 3.5% of the total geographical area of the borough, and nearly one and a half times the size of Hyde Park[2] in central London.

Because they are so numerous, hard surfacing in front gardens of 26-50m^2 in area accounts for nearly half (46%) of the total area hard surfaced. Most of the rest is in gardens of 51-100m^2 (see table below). However, hard surfacing is widespread across all sizes of front garden. The table below shows that, although the proportion of area hard surfaced is greatest in front gardens of up to 50m^2, around half of the area taken up by larger gardens is also hard surfaced:

Estimated amount of hard surfacing of front gardens in the London Borough of Ealing, by size of front garden

Size of front garden (m^2)	Total front garden area (m^2)	Area hard surfaced (m^2)	*Share of borough total (%)*	% of total front garden area hard surfaced
Less than 12	21,000	14,000	*1*	66%
12 – 25	361,000	258,000	*13*	71%
26 – 50	1,309,000	900,000	*46*	69%
Subtotal: 50 or less	1,691,000	1,172,000	*60*	69%
51 – 100	846,000	525,000	*27*	62%
101 – 200	372,000	189,000	*10*	51%
More than 200	144,000	76,000	*4*	53%
Borough total	**3,052,000**	**1,961,000**	***100***	**64%**

The next table shows that, overall, the extent of front garden hard surfacing is similar in most areas of the borough. The exceptions are Northolt and the northern wards of Ealing, where less than 60% of the front garden area is hard surfaced, and Southall, where nearly 80% is.

Estimated amount of hard surfacing of front gardens in the London Borough of Ealing, by area of borough

Area of borough	Total front garden area (m^2)	Area hard surfaced (m^2)	% of total front garden area hard surfaced
Acton	436,000	271,000	62%
Ealing (N)*	523,000	294,000	56%
Ealing (S)*	446,000	277,000	62%
Ealing (total)	969,000	571,000	59%
Greenford	479,000	316,000	66%
Hanwell	187,000	127,000	68%
Northolt	329,000	187,000	57%
Perivale	173,000	113,000	65%
Southall	479,000	376,000	79%
Borough total	**3,053,000**	**1,961,000**	**64%**

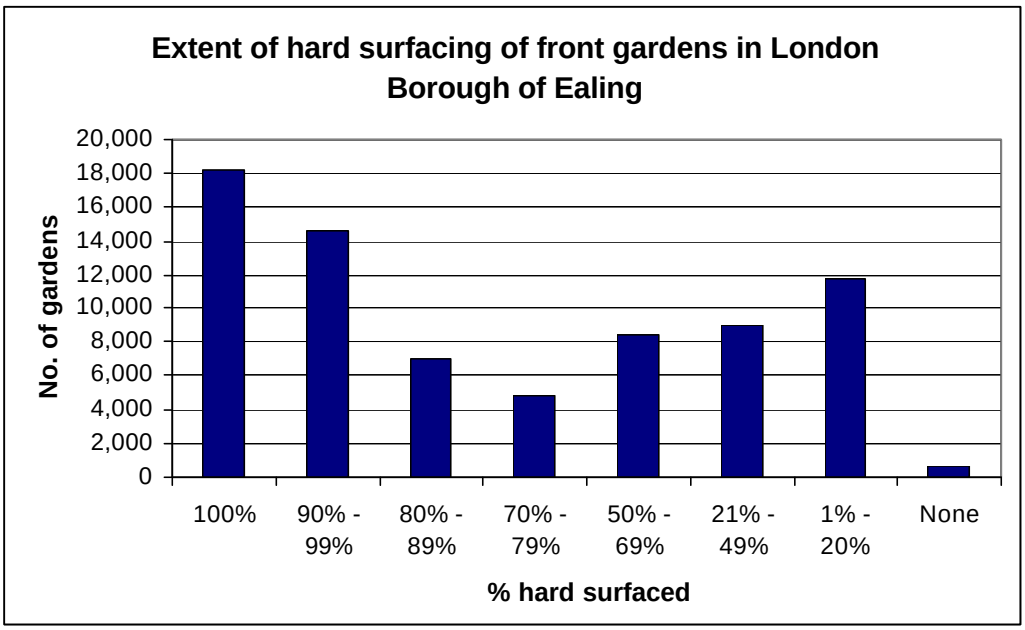
[2] Derived from the estimate of the total area of hard surfacing in front gardens in Greater London - 32 square kilometres or 22 Hyde Parks – in the London Assembly's report on front gardens: "Crazy Paving: the environmental importance of London's front gardens", London Assembly Environment Committee, Greater London Authority, September 2005, www.london.gov.uk/assembly/reports/environment/frontgardens.pdf

3.3 Extent of hard surfacing in individual front gardens

Turning now to the situation in individual gardens, in the borough as a whole the average front garden is 68% hard surfaced. But this average hides a very wide range. Of the borough's 74,300 front gardens:

- An estimated 18,300, a quarter of the total, are completely (i.e. 100%) hard surfaced.
- 14,500, or a fifth, have between 90% and 99% of their area hard surfaced.
- A total of 44,600, or six out of 10, have 70% or more of their area hard surfaced.
- A total of 53,000, or over two thirds, have half or more of their area hard surfaced.
- Only 21,200 have less than half of their area hard surfaced, and just 12,300 have 'traditional' 20% or less hard surfacing.

These figures are summarised in the chart and table below:



Extent of front garden hard surfacing in the London Borough of Ealing

Proportion of front garden hard surfaced	Number of front gardens in borough	Share of total (%)	Cumulative number of front gardens	Cumulative %
100%	18,300	25	18,300	25
90% - 99%	14,500	20	32,800	44
70% - 89%	11,800	16	44,600	60
50% - 69%	8,400	11	53,000	71
21% - 49%	8,900	12	61,900	83
20% - 1%	11,700	16	73,600	99
None[3]	700	1	74,300	100
Total front gardens in borough	**74,300**	**100**		

Because of rounding, numbers in this and other tables may not sum to totals.

When looking initially at ways of estimating the amounts of hard surfacing in the borough's front gardens, we found that the 'traditional' front garden, consisting simply of a path between front door and pavement plus, often, a narrow strip around the front of the house, is about 15% - 20% hard surfaced. A wider strip can take the figure to 30%, and in some parts of the borough there are gardens where the original design

[3] A small number of front gardens, typically those where the front door of the property is at the side and is accessed directly from the driveway, have no hard surfacing at all.

(created when the house was built) is up to 50% - 60% hard surfaced (see Appendix 1 for further information on this).

With the exception of some of the most recently-built houses in the borough, the original front garden layout is rarely more than 69% hard surfaced. So most of the 44,600 gardens which are 70% or more hard surfaced are likely to have had their original layouts changed.

This is important because, in terms of square metres, front gardens which are 70% or more hard surfaced account for four-fifths of the total amount of front garden hard surfacing in the borough. In particular, those that are completely (100%) hard surfaced account for nearly a third of the total front garden hard surfacing in the borough (see table).

Extent of front garden hard surfacing in the London Borough of Ealing (square metres)

Proportion of front garden hard surfaced	Total front garden area (m^2)	*Share of borough total (%)*	Area hard surfaced (m^2)	*Share of borough total (%)*
100%	637,000	*21*	637,000	*32*
90% - 99%	589,000	*19*	548,000	*28*
70% - 89%	465,000	*15*	362,000	*18*
subtotal: 70% or more	1,691,000	*55*	1,547,000	*79*
50% - 69%	364,000	*12*	200,000	*10*
21% - 49%	393,000	*13*	131,000	*7*
20% or less	603,000	*20*	83,000	*4*
Subtotal: 69% or less	1,361,000	*45*	414,000	*21*
Borough total	**3,052,000**	***100***	**1,961,000**	***100***

Front gardens which are less that 70% hard surfaced account for only a fifth (21%) of the borough's total front garden hard surfacing. This suggests that, if no changes to original layouts involving greater amounts of hard surfacing had been made, the total area of front garden hard surfacing in the borough would be about 21% of the total front garden area, i.e. 640,000 square metres, just a third of what it currently is.

3.3.1 Extent of hard surfacing in individual front gardens by size of garden

The size of the front garden clearly has some influence on the proportion that is hard surfaced. There is a tendency for smaller gardens to have a larger proportion hard surfaced, and for larger gardens to have a smaller proportion. Thus over a third (36%) of the smallest front gardens – less than $12m^2$ in area – are completely hard surfaced, compared with only 10% of larger ($101\text{-}200m^2$) ones, as shown in the table below. But size is not the whole story – the table also shows that nearly a fifth of the smallest gardens have less than 20% hard surfacing.

Proportion of front garden hard surfaced, by size of front garden

Size of front garden (m^2)	Number of front gardens in borough	100% hard surfaced	90% - 99% hard surfaced	70% - 89% hard surfaced	Subtotal: 70% or more	50% - 69% hard surfaced	21% - 49% hard surfaced	20% or less hard surfaced
Less than 12	2,300	36%	8%	12%	56%	15%	10%	19%
12 – 25	20,500	26%	19%	19%	64%	13%	13%	9%
26 – 50	35,100	26%	21%	15%	62%	9%	11%	17%
Subtotal: 50 or less	57,900	27%	20%	17%	63%	11%	12%	15%
51 - 100	13,000	19%	20%	14%	52%	13%	13%	20%
101 – 200	2,800	10%	15%	14%	38%	13%	17%	28%
More than 200*	500	0%	17%	12%	29%	29%	23%	18%
Borough total	**74,300**	**25%**	**20%**	**16%**	**61%**	**11%**	**12%**	**17%**

* small sample (n=45)

3.3.2 Extent of hard surfacing in individual front gardens in different areas of the borough

Area of the borough appears to be a more important influence on the extent of front garden hard surfacing than size of garden. The table below shows that the prevalence of completely hard surfaced front gardens ranges from an estimated 44% in Southall to 14% in Ealing, and that of 'traditional' 20%-or-less hard surfaced gardens from 29% in Northolt and the northern wards of Ealing to just eight or nine percent in Hanwell, Perivale and Southall.

The extent of front garden hard surfacing is greatest in Southall, where over three-quarters (78%) of gardens have hard surfacing over 70% or more of their areas. These proportions are substantially higher than in other parts of the borough.

In Greenford, Northolt and Hanwell an estimated quarter of front gardens are completely hard surfaced. Approaching two-thirds in Greenford and Hanwell, and over half in Northolt, are 70% or more hard surfaced. At the same time, in Greenford a fifth and in Northolt over a quarter of front gardens have 'traditional' 20%-or-less hard surfacing.

In Acton and Perivale the proportion of completely hard surfaced front gardens is lower – a fifth and a sixth respectively. However, because there are many which are nearly but not completely hard surfaced, the estimated proportion 70% or more hard surfaced is over half, similar to Greenford, Northolt and Hanwell.

Ealing has the lowest proportion (14%) of completely hard surfaced gardens, and in the northern wards over a quarter of front gardens are 20% hard surfaced or less. This is probably because the only three conservation areas in the borough where there is a degree of planning control over front garden development are in these wards[4].

Proportion of front garden hard surfaced, by area of borough

Area of borough	No. of front gardens	100% hard surfaced	90% - 99% hard surfaced	70% - 89% hard surfaced	Subtotal: 70% or more	50% - 69% hard surfaced	21% - 49% hard surfaced	20% or less hard surfaced	*Average % hard surfaced*
Acton	12,200	20%	19%	17%	57%	14%	14%	15%	*66%*
Ealing (N)	10,300	14%	14%	19%	47%	12%	13%	29%	*57%*
Ealing (S)	9,600	14%	19%	23%	56%	14%	16%	13%	*65%*
Ealing (total)	19,900	14%	16%	21%	51%	13%	14%	21%	*61%*
Greenford	10,300	25%	22%	13%	60%	9%	11%	21%	*67%*
Hanwell	7,200	25%	19%	19%	64%	14%	14%	8%	*71%*
Northolt	6,500	26%	20%	7%	52%	8%	10%	29%	*61%*
Perivale	3,900	16%	25%	17%	59%	11%	23%	8%	*67%*
Southall	14,200	44%	21%	12%	78%	8%	5%	9%	*81%*
Borough total	**74,300**	**25%**	**20%**	**16%**	**61%**	**11%**	**12%**	**17%**	***68%***

[4] See our earlier research "Hard Surfacing of Front Gardens: report on desk research", May 2004, for further information on these conservation areas (available on www.london21.org/ealingfrontgardens)

3.3.3 Extent of hard surfacing in individual front gardens by size of garden and area of borough

Because size of front garden influences the amount of hard surfacing, and front garden sizes vary in different parts of the borough, we have looked at the hard surfacing of the three most common front garden sizes, in each area. The table below summarises the extent of hard surfacing in these three sizes of front garden in each area of the borough (except Perivale where the sample is too small to be broken down to this level of detail). It suggests that the area of the borough is a greater influence on the extent of hard surfacing than the size of the front garden. Thus:

- **The 12-25m^2 front garden** is most common in Acton, Southall, Hanwell and the southern wards of Ealing. In these areas, these gardens often have large amounts of hard surfacing. Three in five, and in Southall three-quarters, of these gardens are 70% or more hard surfaced. In Southall, nearly half (47%) are completely hard surfaced. In the other areas complete hard surfacing is less common, although there are more in the 70-89% and 90-99% hard surfaced categories.

- **The 26-50m^2 front garden** is common in all parts of the borough, with especially large numbers in Southall, Greenford and Ealing's northern wards. The extent to which these gardens are hard surfaced varies by area. It is greatest in Southall, where nearing half (46%) are completely hard surfaced, and a further quarter 90-99% hard surfaced. In both Greenford and Northolt over a quarter are completely hard surfaced, and a further quarter are nearly so (90-99%). In Ealing and Acton, however, fewer than one in five of these gardens is completely hard surfaced, and around a quarter have 'traditional' 20%-or-less hard surfaced – as is also the case in Northolt.

- **51-100m^2 front gardens** are less numerous, but present in all areas of the borough, although with most in Ealing and fewest in Hanwell. These larger front gardens tend to be less extensively hard surfaced. However, in Southall nearly two-thirds are 90% or more hard surfaced, and in Greenford nearly half are. On the other hand, over a quarter of these gardens in Northolt and in the northern wards of Ealing are 'traditional' 20%-or-less hard surfaced.

Proportion of front garden hard surfaced, by size of front garden and area of borough

	Acton	Ealing S	Ealing N	Ealing total	Green-ford	Hanwell	Northolt	Southall	Borough total including Perivale
Total no. of front gardens of 12-25 m^2	**5,900**	**3,800**	**1,300**	**5,100**	**400**	**3,900**	**400**	**4,700**	**20,500**
% hard surfaced:	%	%	%	%	%	%	%	%	%
100%	22	15	9	13	27	26	19	47	26
90% - 99%	22	22	21	22	6	21	11	13	19
70% - 89%	18	23	26	24	4	21	5	16	19
subtotal: 70% or more	63	60	55	59	37	67	34	76	65
50% - 69%	14	15	7	13	9	16	5	13	13
21% - 49%	17	14	24	17	8	12	3	6	13
20% or less	7	11	14	12	46	5	58	6	9
Total no. of front gardens of 26-50m^2	**3,200**	**2,500**	**6,200**	**8,800**	**6,800**	**2,300**	**3,900**	**7,000**	**35,100**
% hard surfaced:	%	%	%	%	%	%	%	%	%
100%	19	16	17	17	27	19	31	46	26
90% - 99%	16	15	12	13	27	18	24	25	21
70% - 89%	18	24	17	19	15	21	8	11	15
subtotal: 70% or more	53	56	46	49	68	59	62	82	63
50% - 69%	12	12	10	10	6	12	7	5	9
21% - 49%	13	18	12	14	9	18	7	3	11
20% or less	22	14	32	27	16	11	24	10	18
Total no. of front gardens of 51-100m^2	**2,000**	**2,200**	**1,700**	**3,900**	**2,300**	**500**	**2,000**	**1,700**	**13,000**
% hard surfaced:	%	%	%	%	%	%	%	%	%
100%	16	11	10	11	23	25	21	34	19
90% - 99%	18	23	12	19	16	13	19	31	20
70% - 89%	17	19	21	20	11	11	5	8	14
subtotal: 70% or more	52	53	44	49	49	48	44	74	52
50% - 69%	15	15	22	18	14	7	11	7	13
21% - 49%	9	18	6	13	12	24	15	6	13
20% or less	24	14	27	20	25	21	30	14	22

3.4 Types of hard surfacing materials used in front gardens

The hard surfacing material most often found in the borough's front gardens is concrete. It used to some extent in nearly half (48%) and as the only hard surfacing in a quarter. Other generally impermeable surfaces – various types of paving, brick and stone – are next most frequently used (see table below). In two-thirds (66%) of gardens only one type of hard surfacing is used.

Hard surfacing materials used in front gardens in London Borough of Ealing

Hard surfacing material	Used at all	Only material used	Used with other type(s)
Base = total front gardens in borough	*74,300*	*74,300*	*74,300*
	%	%	%
Concrete	48	26	22
Bricks or stone blocks (including painted or sealed)	24	15	9
Rectangular, square or hexagonal paving	24	10	14
Crazy paving	14	7	7
Gravel or loose stones, including slate chippings	13	1	12
Quarry or ceramic tiles	12	2	10
Asphalt or tarmac	5	2	3
Rubble, hardcore or other broken material	1	<1	1
Other*	<1	<1	<1
Unsure / unrecorded	2	2	2

* other materials included wooden decking, marble, wooden blocks or slats, plastic sheeting, rubbish/junk, flint, railway sleepers.

3.4.1 Estimated area (m^2) hard surfaced by different types of materials

We cannot calculate precisely the total area of each type of hard surfacing in the borough's front gardens. This is because, to avoid the survey being unduly onerous, we asked volunteers to record only the total proportion of each front garden hard surfaced, rather than the proportion surfaced by each different type of material present.

However, since 66% of front gardens, accounting for 70% in terms of area, have only one type of hard surfacing, the estimate below has been made on the assumption that in the remainder the same proportions of materials are used. This suggests that, overall, a third of front garden hard surfacing in the borough is bricks or stone blocks. Another third is concrete, a quarter is paving and the remaining tenth is asphalt, gravel and other materials (see table below).

Estimated area of hard surfacing materials used in front gardens in London Borough of Ealing

Hard surfacing material	Estimated front garden area hard surfaced with this material (m^2)	*Share of total (%)*
Bricks or stone blocks (including painted or sealed)	618,000	*32*
Concrete	615,000	*31*
Rectangular, square or hexagonal paving	257,000	*13*
Crazy paving	242,000	*12*
Asphalt or tarmac	125,000	*6*
Gravel or loose stones, including slate chippings	56,000	*3*
Quarry or ceramic tiles	23,000	*1*
Rubble, hardcore or other broken material, all other materials, unsure/unrecorded	26,000	*1*
Total area of front gardens hard surfaced (m^2)	**1,961,000**	***100***

3.4.2 Types of hard surfacing materials used in different areas of the borough

There are some differences in the extent to which the various materials are used in different areas of the borough. Concrete is the most frequently used in all areas except in Ealing, where it is overtaken by the recently-popular bricks or stone blocks. Concrete is particularly popular in Southall, where it is the only type of hard surfacing in use in 45% of front gardens, and also popular in Northolt, Perivale and Greenford, where it is the only type used in about a third.

Gravel, loose stones and slate chippings are popular in certain areas, particularly the smaller gardens of Hanwell, Acton and south Ealing, while traditional quarry and ceramic tiles, widely used for paths in the early 1900s, are also still in evidence in these areas.

Hard surfacing materials used in front gardens in London Borough of Ealing, by area of borough

Area of borough	No. of front gardens	Concrete		Bricks or stone blocks (incl painted/ sealed)		Rectangular, square or hexagonal paving		Crazy paving		Gravel or loose stones, incl slate chip-pings	Quarry or cera-mic tiles
		At all	*only*	*at all*	*only*	*at all*	*only*	*at all*	*Only*	*at all*	*at all*
Acton	12,200	45%	16%	19%	9%	28%	10%	12%	4%	20%	33%
Ealing (N)	10,300	32%	19%	35%	23%	27%	11%	16%	11%	11%	4%
Ealing (S)	9,600	43%	12%	28%	13%	29%	6%	21%	9%	21%	25%
Ealing (total)	19,900	37%	15%	31%	18%	27%	9%	18%	10%	16%	14%
Greenford	10,300	50%	31%	23%	19%	22%	11%	18%	10%	8%	1%
Hanwell	7,200	58%	17%	27%	8%	28%	8%	15%	4%	27%	16%
Northolt	6,500	47%	34%	19%	15%	13%	8%	18%	13%	5%	1%
Perivale	3,900	54%	33%	25%	17%	24%	11%	11%	6%	8%	<1%
Southall	14,200	58%	45%	19%	17%	18%	12%	7%	4%	3%	5%
Borough total	**74,300**	**48%**	**26%**	**24%**	**15%**	**24%**	**10%**	**14%**	**7%**	**13%**	**12%**

3.4.3 Types of hard surfacing materials used by proportion of garden hard surfaced

The next table shows that concrete and rectangular, square, hexagonal and crazy pavings are used to a similar extent irrespective of the proportion of garden hard surfaced. The picture is different, however, for bricks or stone blocks, which are much more common where the proportion of hard surfacing is high – and even more common than concrete in gardens which are completely hard surfaced (used in 28%, compared with concrete in 24%).

Because these bricks or stone surfaces have only become popular in recent years, it is likely that these highly hard surfaced front gardens are relatively recent constructions, giving some support to the view that extensive hard surfacing, with very little or no vegetation retained, is a fairly recent trend.

Main hard surfacing materials used, by proportion of front garden hard surfaced

Proportion of front garden hard surfaced	No. of front gardens	Concrete		Bricks or stone blocks (incl painted/ sealed)		Rectangular, square or hexagonal paving		Crazy paving		Gravel or loose stones, incl slate chip-pings	Quarry or cera-mic tiles
		at all	*only*	*at all*	*only*	*at all*	*only*	*at all*	*only*	*at all*	*at all*
100%	18,300	41%	24%	35%	28%	21%	10%	9%	6%	12%	9%
90% - 99%	14,500	43%	19%	29%	18%	24%	8%	18%	8%	18%	13%
70% - 89%	11,800	47%	16%	24%	10%	32%	10%	21%	7%	20%	15%
50% - 69%	8,400	56%	25%	19%	7%	27%	10%	17%	6%	14%	17%
21% - 49%	8,900	58%	32%	16%	6%	23%	9%	14%	8%	10%	17%
20% or less	12,300	52%	44%	10%	7%	17%	12%	11%	9%	4%	7%
Borough total	**74,300**	**48%**	**26%**	**24%**	**15%**	**24%**	**10%**	**14%**	**7%**	**13%**	**12%**

3.4.4 Estimated area (m^2) hard surfaced by different types of materials by proportion of garden hard surfaced

Further estimates (using the same assumptions as in Section 3.4.1) also indicate that the area covered by bricks or stone blocks is much greater than concrete in front gardens which are extensively hard surfaced.

In completely hard surfaced front gardens, an estimated 275,000 m^2 (43% of their total area) is covered by bricks or stone blocks, compared with 182,000 m^2 by concrete (29% of the total). In gardens which are 90-99% hard surfaced, there is an estimated 183,000 m^2 of bricks or stone blocks (33% of their total area) and 154,000 m^2 of concrete. In those which are 70-89% hard surfaced, the figures are 100,000 m^2 (28%) and 95,000 m^2 (26%) respectively.

It is only in front gardens which are less than 70% hard surfaced that concrete is more prevalent, again supporting the view that there is a trend towards surfacing greater amounts of front garden with this recently-popular material. The table below summarises this:

Estimated area of hard surfacing materials used in front gardens in London Borough of Ealing, by proportion of front garden hard surfaced

Proportion of front garden hard surfaced ➔	100% hard surfaced	90-99% hard surfaced	70-89% hard surfaced	50-69% hard surfaced	21-49% hard surfaced	20% or less hard surfaced
Area hard surfaced (m2)	637,000	548,000	362,000	200,000	131,000	83,000
	%	%	%	%	%	%
Bricks or stone blocks (including painted or sealed)	43	33	28	17	15	8
Concrete	29	28	26	39	46	56
Rectangular, square or hexagonal paving	11	13	17	13	14	11
Crazy paving	10	13	14	13	15	14
Asphalt or tarmac	4	8	8	12	2	3
Gravel or loose stones, including slate chippings	1	3	5	3	4	1
Quarry or ceramic tiles	1	1	<1	2	3	3
Rubble, hardcore or other broken material, all other materials, unsure/unrecorded	1	1	1	1	2	3

3.5 Pavement crossovers and vehicle parking

Because it is widely believed that front gardens are hard surfaced so that they can be used for parking, we have looked at this issue in some detail.

When surveying it was not possible to establish with complete certainty whether a front garden was being used for parking, if there was no vehicle parked on it at the time. Therefore the surveyors were asked to answer the question "*Can the hard surfacing in the front garden be accessed by vehicle(s), from either road or driveway?*" In this report, we have treated front gardens where the hard surfacing was recorded by the surveyor as accessible by vehicle(s) as likely to be used for parking. Those where the surveyor recorded the hard surfacing as not accessible, or was unsure, have been treated as not likely to be used for parking.

3.5.1 Pavement crossovers in properties with front gardens

To use the front garden for parking, a pavement 'crossover' or 'kerb drop' should be in place.

> *'A pavement crossover is an alteration to the footway. It involves lowering the kerb and laying new foundations to the paving to enable a car to be driven onto the front area of a property. It is an offence to cross the public footway without a legally constructed footway crossing.' (Source: Ealing Council website)*

For each front garden, surveyors were asked to record whether the associated property had one or more pavement crossover(s) constructed. A crossover can lead direct to the front garden, or to a driveway, or both. A few properties have two crossovers, to allow for vehicle entry and exit.

Overall, the associated properties of an estimated 32,800 front gardens, i.e. 44% of the borough total, have one or more pavement crossovers[5]. However, as would be expected, properties with larger front gardens are much more likely to have them than those with smaller ones (see table)[6].

Number of properties with front gardens and pavement crossover(s), by size of garden

Size of front garden (m^2)	No. of front gardens	No. of front gardens where associated property has crossover(s)	% of front gardens with associated crossover(s)
Less than 12	2,300	100	5%
12 – 25	20,500	2,100	10%
26 – 50	35,100	18,900	54%
51 – 100	13,000	9,400	72%
101 – 200	2,800	1,900	68%
More than 200	500	450	89%
Borough total	**74,300**	**32,800**	**44%**

The incidence of with-crossover front gardens in the different areas of the borough is largely a reflection of front garden size. Thus it is lowest in Hanwell and Acton, where front gardens are smallest, and highest in Northolt, where gardens are larger (see table):

Number of properties with front gardens and pavement crossover(s), by area of borough

Area of borough	No. of front gardens	No. of front gardens where associated property has crossover(s)	% of front gardens with associated crossover(s)
Acton	12,200	3,200	26%
Ealing (N)*	10,300	6,100	59%
Ealing (S)*	9,600	4,000	42%
Ealing (total)	19,900	10,100	51%
Greenford	10,300	5,800	56%
Hanwell	7,200	1,300	17%
Northolt	6,500	5,300	82%
Perivale	3,900	1,800	47%
Southall	14,200	5,400	38%
Borough total	**74,300**	**32,800**	**44%**

A property having a pavement crossover does not necessarily mean that the front garden is being used for parking – the crossover may provide access to a driveway. Of the 32,800 front gardens where the associated property has one or more crossovers, an estimated four-fifths (26,400) are likely to be being used for parking, and one fifth (6,400) are not. This is further discussed below.

[5] Due to an ambiguity in the notes on the recording sheet, a small number of volunteers recorded only those crossovers leading directly to the front garden area, rather than taking the property as a whole. In most cases this has been corrected by revisiting the road and revising the records affected, but it is possible that a few cases have been missed and therefore the number of properties with crossovers may be slightly under-estimated.

[6] Ealing Council criteria for permitting crossover construction are that the area to be used for parking must be at least 4.2 metres in depth from the rear of the public highway (pavement) to the front of the house or nearest building, or 3.8 metres if the frontage of the property is over 6.5 metres wide.

3.5.2 Use of front garden for parking (with or without a pavement crossover)

Overall, an estimated 31,200 front gardens, i.e. 42% of the borough total of 74,300, are likely to be being used for parking. While most of these front gardens are over 25m^2 in size, a small but significant proportion – six percent, or about 2,000 front gardens - are smaller than this (see table).

Number of properties with front garden likely to be used for parking, by size of garden

Size of front garden (m^2)	No. of front gardens	No. of front gardens likely to be being used for parking	% of total front gardens likely to be used for parking
Less than 12	2,300	100	6%
12 – 25	20,500	1,800	9%
26 – 50	35,100	18,400	52%
51 – 100	13,000	8,600	66%
101 – 200	2,800	1,800	63%
More than 200	500	450	88%
Borough total	**74,300**	**31,200**	**42%**

Of the 31,200 front gardens likely to be being used for parking, an estimated 26,400 are in properties where there is a pavement crossover constructed. In the remaining 4,800, no crossover is present. This suggests that they are being used for parking by crossing the footway illegally. Therefore, of the borough's 74,300 front gardens, about six percent could be being used illegally for parking (see table below).

3.5.3 Use of front garden for parking (with or without a pavement crossover) by area of borough

The next table shows that the amount of front garden parking varies across the borough. It is lowest in Hanwell, where fewer than a fifth of front gardens are likely to be being used in this way. In Acton a quarter, in Ealing over a third, in Perivale a half, in Southall over a half and in Greenford and Northolt three-fifths of front gardens are likely to be being used for parking cars or other vehicles.

In each area, a proportion of these front gardens have no associated pavement crossover and so are likely to be being used illegally. This proportion varies from an estimated one percent in Northolt (where most front gardens have an associated crossover anyway) to nine percent in Greenford and a very high 18% in Southall.

Use of front garden for parking with and without pavement crossover, by area of borough

Area of borough	Total no. of front gardens	No. of front gardens likely to be being used for parking	% of total front gardens	No. of front gardens likely to be being used for parking + crossover constructed	No. of front gardens likely to be being used for parking + no crossover	% of total front gardens likely to be used illegally for parking
Acton	12,200	2,900	24%	2,500	400[7]	3%
Ealing (N)*	10,300	3,800	37%	3,600	200	2%
Ealing (S)*	9,600	3,400	35%	3,200	200	2%
Ealing (total)	19,900	7,200	36%	6,800	400	2%
Greenford	10,300	6,200	60%	5,200	900	9%
Hanwell	7,200	1,300	18%	1,000	300	4%
Northolt	6,500	3,800	59%	3,700	100	1%
Perivale	3,900	2,000	51%	1,700	200	6%
Southall	14,200	7,800	55%	5,300	2,500	18%
Borough total	**74,300**	**31,200**	**42%**	**26,400**	**4,800**	**6%**

[7] A volunteer estimated that there are over 100 illegal crossovers in an estate in north Acton. "We have noticed that many residents of the old Golf Links estate to the north of the A40 don't bother with crossovers at all, they just drive across the pavement onto their bits of concrete and woe betide anyone who has the nerve to park in front of their 'drives' "

The sizes of gardens available is a major, though not necessarily the only, factor influencing the extent to which front gardens are used for parking in the different areas of the borough. Hanwell has the lowest front garden parking mainly because there are relatively few 'parkable' front gardens of more than 25 m^2 in area. Greenford has the highest and also has many gardens of over 25 m^2.

As the table below shows, the differences in the extent to which the most common sizes of garden are used for parking in the different areas of the borough are not very great. So, for example, in the southern wards of Ealing 71% of larger (51-100 m^2) front gardens are being used for parking, and in Southall the figure is 83%.

Estimated numbers of front gardens used for parking, by size of garden and area of borough

			Size of front garden in square metres		
Area of borough		All	12-25m^2	26-50m^2	51-100m^2
Acton	**Total**	**12,200**	**5,900**	**3,200**	**2,000**
	Likely to be used for parking	2,900	100	1,100	1,300
	% of total	24%	2%	34%	63%
Ealing (N)	**Total**	**10,300**	**1,300**	**6,200**	**1,700**
	Likely to be used for parking	3,800	500	1,900	900
	% of total	37%	36%	30%	54%
Ealing (S)	**Total**	**9,600**	**3,800**	**2,500**	**2,200**
	Likely to be used for parking	3,400	200	1,000	1,600
	% of total	35%	4%	39%	71%
Ealing (total)	**Total**	**19,900**	**5,100**	**8,800**	**3,900**
	Likely to be used for parking	7,200	600	2,900	2,500
	% of total	36%	12%	33%	63%
Greenford	**Total**	**10,300**	**400**	**6,800**	**2,300**
	Likely to be used for parking	6,200	100	4,300	1,500
	% of total	60%	19%	63%	65%
Hanwell	**Total**	**7,200**	**3,900**	**2,300**	**400**
	Likely to be used for parking	1,300	200	800	300
	% of total	18%	5%	34%	57%
Northolt	**Total**	**6,500**	**400**	**3,900**	**2,000**
	Likely to be used for parking	3,800	<100	2,400	1,200
	% of total	58%	13%	64%	61%
Perivale	**Total**	**3,900**	**100**	**3,100**	**700**
	Likely to be used for parking	2,000	<100	1,500	500
	% of total	50%	17%	47%	67%
Southall	**Total**	**14,200**	**4,700**	**7,000**	**1,700**
	Likely to be used for parking	7,800	700	5,500	1,400
	% of total	55%	15%	78%	83%
Borough total	**Total**	**74,300**	**20,500**	**35,100**	**13,000**
	Likely to be used for parking	31,200	1,800	18,400	8,600
	% of total	42%	9%	52%	66%

Another factor likely to influence the extent to which front gardens are used for parking is access to and choice of public transport. Acton, Ealing and Hanwell, the areas of the borough where the proportion of front gardens used for parking is lowest, are well served by a range of public transport: tube, main line railway and bus. Greenford, Northolt, Southall and Perivale, where proportions of front gardens used for parking are higher, have a more restricted range of public transport services.

3.6 Extent to which front garden hard surfacing is used for parking

Many people assume that extensive hard surfacing of front gardens is for parking. As a member of one of the borough's LA21 project groups said when this project was being planned:

> *"Isn't it pretty obvious that people hard-surface front gardens because they can't park in the street easily?"*

However, the survey results show that parking is not the only reason why the borough's front gardens are hard surfaced. Of the 18,300 completely hard surfaced front gardens in the borough, an estimated 6,500 (over a third) are not being used for parking. Similarly, 6,100, or two-fifths of 90-99% hard surfaced ones, and 7,300 or three-fifths of 70-89% ones, are not being used for parking either (see table overleaf).

Extent of hard surfacing of front gardens, by whether used for parking

Use for parking	Borough total	100% hard surfaced	90% - 99% hard surfaced	Subtotal : 90% or more	70% - 89% hard surfaced	Subtotal : 70% or more	50% - 69% hard surfaced	21% - 49% hard surfaced	20% or less hard surfaced
All front gardens	**74,300**	**18,300**	**14,500**	**32,800**	**11,800**	**44,600**	**8,400**	**8,900**	**12,300**
Likely to be used for parking	31,200	11,600	8,300	19,900	4,500	24,300	2,800	2,100	1,900
Unlikely to be used for parking	42,400	6,500	6,100	12,600	7,300	19,900	5,500	6,800	9,900
% likely to be used	*42%*	*63%*	*57%*	*61%*	*38%*	*55%*	*34%*	*24%*	*15%*
% unlikely to be used	*57%*	*36%*	*42%*	*39%*	*62%*	*45%*	*65%*	*76%*	*80%*

Numbers do not sum to totals as gardens where it was unclear whether or not they could be accessed by vehicle(s) have been excluded

Overall, only just over half (55%) of gardens which are 70% or more hard surfaced – those most likely to have had their original layout changed - are likely to be being used for parking, but 45% are not. So while parking is the main factor, a sizeable proportion of the borough's extensively hard surfaced front gardens appear to have acquired this amount of hard surfacing for other reasons.

3.6.1 Extent to which front garden hard surfacing is used for parking by size of garden

Size of garden seems to be a factor is this. Even though they are mostly too small to be used for parking, many small (25m^2 or less) front gardens are extensively hard surfaced. An estimated 10,400 (45%) of the 22,800 front gardens of this size are 90% or more hard surfaced, but only about 1,400 of these are likely to be being used for parking (see table below).

More of the 35,100 medium-sized (26-50m^2) front gardens are likely to be being used for parking, but here again an estimated 3,000 of these are 90%+ hard surfaced but not being so used. There are some even larger gardens which are extensively hard surfaced but appear not to be being used for parking. The table below compiles the data on this.

Extent of hard surfacing of front gardens, by size of garden and whether used for parking

Size in m^2 and use for parking	Total front gardens	100% hard surfaced	90% - 99% hard surfaced	Subtotal : 90% or more	70% - 89% hard surfaced	Subtotal : 70% or more	50% - 69% hard surfaced	21% - 49% hard surfaced	< 20% hard surfaced
All up to 25m^2 front gardens	**22,800**	**6,200**	**4,100**	**10,400**	**4,200**	**14,500**	**3,100**	**2,900**	**2,300**
Likely to be used for parking	2,000	1,100	300	1,400	300	1,700	200	<100	100
Unlikely	20,700	5,100	3,800	8,900	3,800	12,800	2,900	2,800	2,200
% likely to be used	*9%*	*17%*	*7%*	*13%*	*8%*	*12%*	*5%*	*2%*	*2%*
% unlikely to be used	*91%*	*82%*	*93%*	*86%*	*92%*	*88%*	*95%*	*98%*	*97%*
All 26-50m^2 front gardens	**35,100**	**9,300**	**7,300**	**16,600**	**5,400**	**22,000**	**3,000**	**3,800**	**6,300**
Likely to be used for parking	18,400	8,000	5,400	13,400	2,400	15,800	1,100	700	900
Unlikely	16,300	1,200	1,800	3,000	3,000	6,000	1,900	3,100	5,300
% likely to be used	*52%*	*86%*	*74%*	*81%*	*44%*	*72%*	*36%*	*18%*	*14%*
% unlikely to be used	*47%*	*13%*	*25%*	*18%*	*56%*	*27%*	*62%*	*82%*	*85%*
All 51-100m^2 front gardens	**13,000**	**2,400**	**2,600**	**5,100**	**1,800**	**6,800**	**1,700**	**1,600**	**2,800**
Likely to be used for parking	8,600	2,300	2,200	4,400	1,300	5,700	1,100	1,000	700
Unlikely	4,300	200	400	600	400	1,000	600	600	2,000
% likely to be used	*66%*	*92%*	*83%*	*87%*	*75%*	*84%*	*63%*	*63%*	*26%*
% unlikely to be used	*33%*	*8%*	*16%*	*12%*	*22%*	*15%*	*36%*	*36%*	*73%*
All 101 m^2 or more front gardens	**3,300**	**300**	**500**	**800**	**500**	**1,200**	**500**	**600**	**1,000**
Likely to be used for parking	2,200	300	400	700	400	1,100	500	400	200
Unlikely	1,100	0	100	100	<100	100	<100	200	700
% likely to be used	*67%*	*95%*	*87%*	*90%*	*93%*	*91%*	*93%*	*68%*	*23%*
% unlikely to be used	*32%*	*5%*	*13%*	*10%*	*7%*	*9%*	*5%*	*32%*	*76%*

3.6.2 Extent to which front garden hard surfacing is used for parking by area of borough

The next table summarises the available data on the extent of front garden parking and hard surfacing by area of borough.

Among other things, it sheds some light on the apparent discrepancy between the large amount of front garden hard surfacing in Southall (79% of total front garden area hard surfaced) and the amount of front garden parking (55% of gardens used for parking, which is lower than some other areas of the borough).

The table shows that a substantial number of front gardens in Southall – 6,300, or 44% of the total – are completely hard surfaced, but only two-thirds - an estimated 4,100 - are being used for parking, leaving 2,200 completely hard surfaced front gardens not being used for parking but making a substantial contribution to the total front garden hard surfacing in the area. In Section 4 some possible explanations for this are put forward.

Extent of hard surfacing of front gardens, by area of borough and whether used for parking

Area of borough and use for parking	Total front gardens	100% hard surfaced	90% - 99% hard surfaced	Subtotal 90% or more	70% - 89% hard surfaced	Subtotal 70% or more	50% - 69% hard surfaced	21% - 49% hard surfaced	20% or less hard surfaced
Acton	**12,200**	**2,400**	**2,300**	**4,800**	**2,100**	**6,900**	**1,800**	**1,800**	**1,800**
Likely to be used for parking	2,900	900	600	1,500	500	2,000	500	300	200
Unlikely to be used for parking	9,200	1,500	1,700	3,200	1,600	4,800	1,300	1,500	1,600
% likely to be used	*24%*	*35%*	*27%*	*31%*	*25%*	*29%*	*27%*	*14%*	*10%*
% unlikely to be used	*75%*	*62%*	*73%*	*68%*	*74%*	*70%*	*72%*	*85%*	*89%*
Ealing S	**9,600**	**1,300**	**1,900**	**3,200**	**2,200**	**5,400**	**1,400**	**1,500**	**1,300**
Likely to be used for parking	3,400	700	700	1,400	700	2,200	400	400	300
Unlikely to be used for parking	6,200	600	1,100	1,800	1,500	3,200	900	1,100	1,000
% likely to be used	*35%*	*52%*	*39%*	*45%*	*34%*	*40%*	*33%*	*29%*	*24%*
% unlikely to be used	*65%*	*48%*	*60%*	*55%*	*66%*	*60%*	*67%*	*70%*	*76%*
Ealing N	**10,300**	**1,500**	**1,400**	**2,900**	**1,900**	**4,800**	**1,200**	**1,300**	**2,900**
Likely to be used for parking	3,800	1,100	900	2,000	700	2,800	400	200	500
Unlikely to be used for parking	6,400	300	500	800	1,200	2,000	800	1,100	2,500
% likely to be used	*37%*	*77%*	*65%*	*71%*	*38%*	*58%*	*31%*	*17%*	*16%*
% unlikely to be used	*62%*	*22%*	*35%*	*28%*	*60%*	*41%*	*66%*	*83%*	*84%*
Ealing	**19,900**	**2,800**	**3,300**	**6,100**	**4,100**	**10,200**	**2,500**	**2,900**	**4,300**
Likely to be used for parking	7,200	1,800	1,600	3,500	1,500	4,900	800	700	800
Unlikely to be used for parking	12,500	1,000	1,600	2,600	2,600	5,200	1,700	2,200	3,500
% likely to be used	*36%*	*65%*	*50%*	*57%*	*36%*	*48%*	*32%*	*23%*	*18%*
% unlikely to be used	*63%*	*34%*	*49%*	*42%*	*64%*	*51%*	*67%*	*76%*	*82%*
Greenford	**10,300**	**2,600**	**2,300**	**4,900**	**1,300**	**6,200**	**900**	**1,100**	**2,100**
Likely to be used for parking	6,200	2,200	1,900	4,100	800	4,900	600	400	200
Unlikely to be used for parking	4,100	400	300	700	500	0	300	700	1,800
% likely to be used	*60%*	*85%*	*86%*	*85%*	*60%*	*80%*	*63%*	*38%*	*12%*
% unlikely to be used	*40%*	*14%*	*14%*	*14%*	*40%*	*1%*	*37%*	*62%*	*86%*
Hanwell	**7,200**	**1,800**	**1,400**	**3,200**	**1,400**	**4,600**	**1,000**	**1,000**	**600**
Likely to be used for parking	1,300	500	300	800	200	1,000	100	100	100
Unlikely to be used for parking	5,800	1,300	1,100	2,300	1,200	3,500	900	900	500
% likely to be used	*18%*	*30%*	*21%*	*26%*	*15%*	*23%*	*10%*	*9%*	*14%*
% unlikely to be used	*81%*	*69%*	*79%*	*73%*	*84%*	*76%*	*89%*	*91%*	*83%*
Northolt	**6,500**	**1,700**	**1,300**	**3,000**	**400**	**3,400**	**500**	**700**	**1,900**
Likely to be used for parking	3,800	1,500	1,000	2,600	300	2,800	300	300	300
Unlikely to be used for parking	2,500	100	300	400	100	500	200	300	1,500
% likely to be used	*58%*	*91%*	*77%*	*85%*	*64%*	*82%*	*61%*	*49%*	*17%*
% unlikely to be used	*39%*	*8%*	*19%*	*13%*	*35%*	*15%*	*33%*	*51%*	*80%*

Cont'd

Area of borough and use for parking	Total front gardens	100% hard surfaced	90% - 99% hard surfaced	Subtotal 90% or more	70% - 89% hard surfaced	Subtotal 70% or more	50% - 69% hard surfaced	21% - 49% hard surfaced	20% or less hard surfaced
Perivale	**3,900**	**600**	**1,000**	**1,600**	**700**	**2,300**	**400**	**900**	**300**
Likely to be used for parking	2,000	500	700	1,200	400	1,600	100	200	0
Unlikely to be used for parking	1,900	100	300	400	300	600	300	700	300
% likely to be used	*50%*	*86%*	*69%*	*76%*	*62%*	*72%*	*24%*	*22%*	*14%*
% unlikely to be used	*49%*	*14%*	*31%*	*24%*	*38%*	*28%*	*73%*	*77%*	*86%*
Southall	**14,200**	**6,300**	**3,000**	**9,300**	**1,800**	**11,000**	**1,200**	**700**	**1,400**
Likely to be used for parking	7,800	4,100	2,100	6,200	800	6,900	400	200	200
Unlikely to be used for parking	6,300	2,200	900	3,000	1,000	4,000	700	400	1,100
% likely to be used	*55%*	*65%*	*70%*	*67%*	*44%*	*63%*	*37%*	*31%*	*18%*
% unlikely to be used	*44%*	*35%*	*29%*	*33%*	*57%*	*37%*	*63%*	*66%*	*81%*
Borough total	**74,300**	**18,300**	**14,500**	**32,800**	**11,800**	**44,600**	**8,400**	**8,900**	**12,300**
Likely to be used for parking	31,200	11,600	8,300	19,900	4,500	24,300	2,800	2,100	1,900
Unlikely to be used for parking	42,400	6,500	6,100	12,600	7,300	19,900	5,500	6,700	10,300
% likely to be used	*42%*	*63%*	*57%*	*61%*	*38%*	*55%*	*34%*	*24%*	*15%*
% unlikely to be used	*57%*	*36%*	*42%*	*39%*	*62%*	*45%*	*65%*	*75%*	*83%*

3.6.3 Estimated area of hard surfacing used for parking or hard surfaced for other reasons

We cannot calculate precisely the area of the borough's front gardens which is likely to be being used for parking. This is because the survey was conducted by observation from the pavement, and because we did not want to make excessive demands on the volunteers. Therefore we recorded the total proportion of each front garden hard surfaced, but did not break it down into different components – likely parking, path, borders, strip at base of house, etc.

However, to give an indication, we can look at the total amount of hard surfacing in front gardens which are accessible to vehicle(s), at least some of which is therefore likely to be used for parking.

Of the total 1,961,000 m^2 of hard surfacing in the borough's front gardens, about two-thirds, or 1,279,000 m^2, is in front gardens which are accessible by vehicle(s) and therefore likely to be used for parking. The remaining third (683,000 m^2) is in front gardens which do not appear to be accessible to vehicles.

Even in front gardens which are extensively (70% or more) hard surfaced, less than three-quarters of their total hard surfacing is vehicle accessible therefore likely to be used for parking. Even in completely hard surfaced front gardens, a fifth of the hard surfacing is not vehicle accessible (see table below).

Area of hard surfacing in front gardens, by whether likely to be used for parking

Proportion of front garden hard surfaced	Total area of front garden hard surfacing (m^2)	Area hard surfaced in gardens accessible by vehicle(s) (m^2)	% of total	Area hard surfaced in gardens not accessible by vehicle(s) (m^2)	% of total
100%	637,000	501,000	79%	136,000	21%
90% - 99%	548,000	390,000	71%	158,000	29%
70% - 89%	362,000	203,000	56%	159,000	44%
subtotal: 70% or more	1,547,000	1,094,000	71%	453,000	29%
50% - 69%	200,000	110,000	55%	90,000	45%
21% - 49%	131,000	56,000	42%	75,000	58%
20% or less	83,000	18,000	22%	65,000	78%
subtotal: 69% or less	414,000	184,000	44%	230,000	56%
Borough total	**1,961,000**	**1,279,000**	**65%**	**683,000**	**35%**

The table below focuses just on the 18,300 completely hard surfaced front gardens in the borough, which account for 637,000m^2 of hard surfacing, about a third of the borough total. About four-fifths of the 637,000m^2 is in gardens which are accessible to vehicles. But the remaining fifth (136,000m^2) is not.

The majority of this is in smaller front gardens of 25m^2 or less, many of which, as reported in the previous section, are extensively hard surfaced though not used for parking. But the rest (58,000 m^2) is in larger front gardens (26m^2 or more) which appear not to be being used for parking, despite being completely hard surfaced.

Area of completely (100%) hard surfaced front gardens, by whether likely to be used for parking

Size of front garden (m^2)	Total area of front gardens completely hard surfaced (m^2)	Accessible by vehicle(s)	% of total	Not accessible by vehicle(s) or unsure	% of total
Less than 12	7,000	1,000	7%	7,000	93%
12 – 25	91,000	20,000	22%	71,000	78%
subtotal: 25 or less	98,000	20,000	21%	78,000	79%
26 – 50	348,000	302,000	87%	45,000	13%
51 – 100	157,000	146,000	93%	11,000	7%
101 – 200	35,000	33,000	95%	2,000	5%
More than 200	0	-	-	-	-
subtotal: 26 or more	539,000	481,000	89%	58,000	11%
Borough total	**637,000**	**502,000**	**79%**	**136,000**	**21%**

The picture for 90-99% and 70-89% hard surfaced front gardens is similar.

From the survey, we cannot tell why these completely hard surfaced front gardens, which are not used for parking, are so numerous. In Section 4 some possibilities are discussed.

3.7 Relationship between front garden parking and pavement crossovers in road

We looked at the survey results on a road by road basis to examine the relationship between presence of vehicle crossovers and the accessibility to vehicles of the hard surfacing in the front garden (and hence likelihood of being used for parking). Because there should be a pavement crossover to allow vehicular access to the front garden, the relationship is fairly direct. However, the data suggest that the opposite may also be true – the greater the number of crossovers, the more front garden parking there is.

The table below summarises data from the 167 roads surveyed. In the 14 roads where every property has a crossover, 60% or more of the front gardens are likely to be being used for parking (although on three there were none – these are roads where each property has a driveway). On the other hand, in the 42 roads where only 1-20% of properties have crossover, nearly all have fewer than 40% of front gardens likely to be being used for parking.

This suggests that minimising the number of pavement crossovers in a road is likely to minimise the number of front gardens being used for parking.

Front gardens and pavement crossovers in the roads surveyed

Proportion of front gardens in road likely to be being used for parking	Proportion of properties in road which have pavement crossover(s) 100%	60% - 99%	30% - 59%	1% - 29%	None
100%	**3**	1	0	0	0
80%-99%	**5**	**16**	2	1	0
60%-79%	2	**19**	**6**	0	0
40%-59%	1	3	**15**	0	1
20%-39%	0	**7**	**5**	**10**	2
1%-19%	0	2	0	**26**	**3**
None	**3**	0	0	**5**	**29**
Total roads surveyed	**14**	**48**	**28**	**42**	**35**

3.8 Boundary structures and garages

3.8.1 Boundary structures

Of the 74,300 front gardens in the borough, 47,200 (64%) have a hedge, fence, wall, railings, posts, chains or other boundary structure at the front which is complete except for pedestrian entry. A further 12,200 (16%) have a partial structure, and 14,500 (19%) have no front boundary structure at all.

A minority of properties have been designed to have no front boundary structure. In most cases, however, its partial or complete absence is due to use for vehicle parking. As shown in the table below, only 26% of front gardens accessible by vehicles, and therefore likely to be used for parking, have complete front boundary structures, compared with 92% of those which are not likely to be used for parking.

Presence of front boundary structures in front gardens, by whether used for parking

	All front gardens		Front garden accessible by vehicle(s)		Front garden not accessible by vehicle(s)	
Base = borough total ➔	74,300	%	31,200	%	42,400	%
All of front boundary structure present	47,200	64	8,000	26	38,900	92
Part of front boundary structure present	12,200	16	11,000	35	1,200	3
No front boundary structure present	14,500	19	12,100	39	2,300	5

For a small number of front gardens surveyed, it was unclear if the hard surfacing could be accessed by vehicle(s). For this reason the figures in the 'accessible and 'not accessible' columns sum to less than the total.

3.8.2 Garages

The majority of properties with front gardens in the London Borough of Ealing do not have garages. In the borough as a whole, only 14,300 (19%) of properties with front gardens have garages, and 58,300 (79%) do not; in the remainder the situation is unclear.

However, as shown below, there are considerable differences between different areas of the borough. Northolt is very well served with garages – half of the properties with front gardens have one – and in the northern wards of Ealing 40% do. At the other extreme only four and five percent respectively of properties with front gardens in Hanwell and Southall have a garage.

Presence of garage(s) in properties with front gardens in London Borough of Ealing, by area of borough

Area of borough	No. of front gardens	Associated property has no garage	% of total	Associated property has one or more garages	% of total
Acton	12,200	10,500	86%	1,300	11%
Ealing (N)	10,300	5,800	56%	4,300	41%
Ealing (S)	9,600	7,300	76%	2,000	21%
Ealing (total)	19,900	13,100	66%	6,300	32%
Greenford	10,300	7,700	75%	2,000	19%
Hanwell	7,200	6,800	94%	300	4%
Northolt	6,500	3,000	47%	3,300	51%
Perivale	3,900	3,600	91%	400	10%
Southall	14,200	13,500	95%	700	5%
Borough total	**74,300**	**58,300**	**78%**	**14,300**	**19%**

For about 2% of front gardens surveyed, it was unclear if there is a garage associated with the property or not. This was generally due to garages being situated at the rear of houses, or shared blocks of garages. For this reason the figures in the 'no garage' and 'one or more garages' columns sum to less than the total.

The survey has not found any evidence that garages save front gardens from parking. Around 7,600 of the properties with garage(s) have the most common size of front garden (26-50m^2), and most of the rest have larger gardens. This, plus the fact they already have crossovers installed (for garage access), may explain why more properties with garages appear to use the front garden for parking than those without garages. Of the 14,300 properties with garages, 8,700 (61%) have a front garden which is accessible to vehicle(s) and 5,400 (38%) do not. Of the 58,300 without a garage, 21,900 (38%) have front gardens accessible to vehicles and 36,000 (62%) do not.

4. THE BIGGER PICTURE

While not strictly part of the survey findings which form the basis of this report, it nevertheless seems appropriate to look at the bigger picture and to include some discussion of why front gardens are hard surfaced, the problems it causes and the ways in which the current situation can be improved.

Indeed, not to do so would be to ignore feedback from the volunteers, whose observations as they were doing the surveying produced a number of perceptive comments and insights which are included below. Also included are points from our earlier desk research, from the London Assembly's recent review of the issue, and from a number of other sources.

4.1 Why front gardens are hard surfaced

The survey results show that providing parking space is a major, although not the only, reason why front gardens are being hard surfaced.

4.1.1 Parking

In the London Borough of Ealing in particular, a number of factors are contributing to increasing pressure on the parking space available on the borough's residential roads. These include:

Increasing population

- Census data shows that, between 1991 and 2001, the population of the London Borough of Ealing increased by 11% from 271,461 to 300,948 and the number of households increased by nine percent from 108,644 to 118,023.

More vehicles per household

- The number of vehicles has increased faster than the population. Between the 1991 and 2001 Censuses, the number of cars and vans of the borough's households increased by 22% (from 92,600 to 112,907), and more households acquired more than one vehicle. So while the number of households with **one or more** cars/vans increased by 17% (from 68,904 to 80,651), the number with **two or more** increased by 28% (from 20,619 to 26,392) and with **three or more** by no less than 51% (from 3,077 to 4,631).

Larger vehicles

- The increasing popularity of vehicles like 4x4s and SUVs, which are larger than ordinary cars and therefore take up more space when parked, is also a factor.

Less roadside parking, due to construction of pavement crossovers (for front garden parking)

- Like some other London boroughs, Ealing Council has in the past actively encouraged front garden parking on certain roads, so as to remove roadside parking and thereby increase traffic capacity on roads. Its current policy of allowing most applications for pavement crossovers to be constructed has had the effect of reducing the amount of on-road parking available. As one volunteer put it:

  > *"With on-street parking the space a car takes up becomes available for another vehicle when that car is driven to work, to the shops etc. With front garden parking, that space has to be kept free all the time, and is never available for anyone else."*

- In a residential road, the more crossovers are constructed, the less on-road parking is available, so the more residents apply for crossovers and convert their front gardens to parking. This creates a domino effect, so that within a few years a substantial proportion of both front gardens and on-road parking disappears. The Urban Design Alliance[8] has calculated that the average residential street has space to park 1.3 cars per house. Converting all the front gardens for parking creates an average of 2 parking spaces per house, a net gain of 0.7 spaces per house – set against the loss of all front gardens and all on-road parking.

[8] "Returning Roads to Residents: a practical guide to improving your street", UDAL (Urban Design Alliance), 2000, www.udal.org.uk/projects

- The survey findings suggest that more front gardens are hard surfaced in roads where crossovers are prevalent, and, although only a snapshot, that more front gardens have been hard surfaced in recent years. The latter view is corroborated by many of the volunteers and other local people.

Introduction of Controlled Parking Zones

- Ealing Council's phased approach to introducing Controlled Parking Zones (CPZs) has also contributed, in several ways:
    - CPZs are only introduced in roads where parking difficulties have already become severe. By then, some front gardens have already been converted to parking and pavement crossovers constructed (thereby reducing available on-road parking and hence contributing to the parking difficulties).
    - Once a CPZ has been introduced, some residents seek to avoid paying for parking on the road and convert their front gardens to parking or expand existing front garden parking.
    - Vehicles displaced from the new CPZ park in roads outside it, thus increasing pressure on parking in these roads and hence triggering the conversion of more front gardens.

In addition, there is a belief that the availability of off-road parking enhances the value of a property. This is probably so when most of the other properties in the road still have front gardens; when most have lost their front gardens to hard surfacing, the road becomes much less attractive, and property prices fall.

4.1.2 Hard surfacing for other reasons

The survey has shown that, in the London Borough of Ealing, there are many front gardens which are extensively hard surfaced, but not for car parking. There may be a variety of reasons for this. Below are a number of factors which could be contributing, compiled from various sources including feedback from the volunteers, feedback from members of Ealing's LA21 project groups, published articles and press comment. It is unlikely to be an exhaustive list, and we recommend further investigation.

- The desire for a zero-maintenance front garden, due either to inability to maintain a garden because of age, ill-health or disability, or to not wanting to spend time maintaining a garden, having other priorities or feeling that gardening is an undesirable or inappropriate chore.

- A presentable frontage or a tidy look: in contrast to the back garden, which is more private, the front garden is seen by all and contributes to the image and standing of the household. Hard surfacing offers an option which is clean and attractive all the year round, in contrast to what may be perceived, particularly in winter, as an untidy or unattractive patch of vegetation.

- The influence of fashion and garden design, encouraged by TV garden makeover programmes: there is a current vogue for hard surfaces, structures and minimalism rather than traditional shrubs, lawns and flower beds, and so gardens are being hard surfaced to create a look and to convey an image of the household.

- Lack of gardening tradition in some cultures: the borough is very diverse, and home to many people who have not been brought up in the British gardening tradition. Their attitudes to the role and function of the front garden may also be very diverse.

- Lack of knowledge of low-maintenance alternatives: the traditional front garden with a lawn and flowers requires a lot of maintenance. There are many low maintenance options, but people may be unaware of them.

- Contractors promoting their services: leaflets through the letterbox offering landscape services and easy maintenance front gardens, and canvassing adjacent properties while working on a front garden in the road – it is not uncommon to find several next door properties with same surfacing, obviously all laid at the same time.

- A belief that the value of the property will be enhanced by creating a zero-maintenance, pristine look.

- The fact that, except in three of the borough's conservation areas, there are no controls at all over what can be done to a front garden means that drastic changes can be made quickly and without a period of discussion and consideration.

4.2 The problems created

This table summarises the problems and detrimental effects on the environment and to local communities that can be caused by the hard surfacing of front gardens. It has been compiled from a variety of sources, and is an extended version of one which appeared in the report of our earlier research[9].

Aspects of hard surfacing which cause problem(s)	Problem caused	End result (s)
Impermeability	Increased rain water run-off ➔ increased fluctuations in amount of water going into storm drains and thence to local streams and rivers	1. Increased risk of flooding, especially flash flooding. 2. Erosion and damage to riverbanks and hence to their habitats. 3. Increased pressure on roadside storm drains. 4. Increased pressure on sewers, even leading to forced release of sewerage into rivers, as occurred in the River Thames in August 2004. 5. Localised flooding of streets, pavements and nearby properties.
	Increased rain water run-off ➔ picking up oil and heavy metals from hard surfaces beside and close to roads, plus pesticides, herbicides and other chemicals used in gardens	6. Increased levels of pollution of local watercourses ➔ detrimental effects on water quality and on wildlife. 7. Polluted rivers & streams ➔ unattractive environment ➔ less use for leisure ➔ increased risk of vandalism.
	Reduced amount of rainwater percolating through soil	8. Reduction in water purification and removal of pollutants from ground water by soil percolation processes. 9. Soil drying out ➔ increased risk of building subsidence.
Artificial and hard	Absorb more solar heat	10. Increases the local temperature ➔ 'heat island' effects ➔ increased temperature in urban areas ➔ contribution to global warming, and effect on people's health (hotter cities). 11. Increased use of air conditioning ➔ increased energy consumption.
	Absorb less noise	12. Increased noise from traffic and other sources, especially for people living at ground floor level.
	Don't absorb dust	13. Increased air pollution (particulates).
	Don't absorb dirt and spills	14. Dirtier environment ➔ unappealing to community.
Use for parking	Increased numbers of crossovers in pavement	15. Increased corrugation of pavements makes walking more difficult, especially for those with disabilities, the elderly and those with small children, pushing buggies. Also more difficult for two people to walk and talk together side by side.
	Vehicles being driven across and reversed across the pavement	16. Risk to pedestrians, especially children.
	Parked vehicles may overhang pavement	17. Less space on pavement for pedestrians.
	Loss of visibility – parked vehicles are higher and more solid than garden vegetation.	18. More dangerous pedestrian environment especially for children (whom we are trying to encourage to walk to school etc.)
	Net addition to car parking spaces (often)	19. Contributes to generating greater volumes of traffic, contrary to Government policies to reduce traffic.
	Loss of on-street parking created by presence of pavement crossovers, which effectively reserve a section of the road for the sole use of the dwelling with the crossover	20. Increased pressure for parking spaces ➔ more people apply for pavement crossovers to park in their front gardens ➔ domino effect as more front gardens converted to parking. 21. Adverse effect on neighbour relations. 22. Reduces the control that authorities have over parking. 23. Fewer cars parked on the road creates a wider road with improved visibility ➔ encourages traffic to speed ➔ more dangerous for residents and pedestrians.

[9] "Hard Surfacing of Front Gardens: report on desk research", Pene Healey Associates for Ealing's Local Agenda 21 Pollution & Public Health Project Group (working with Ealing's Energy & Built Environment and Natural Environment & Biodiversity Project Groups), May 2004 (available on www.london21.org/ealingfrontgardens)

Aspects of hard surfacing which cause problem(s)	Problem caused	End result (s)
Loss of vegetation	Reduced CO_2 absorption	24. Contribution to global warming: predicted effects include worse air quality; increased energy consumption for air conditioning and cooling; proliferation of microbes and disease-bearing organisms e.g. malaria mosquitoes.
	Loss of shade and of evapo-transpiration	25. Loss of cooling effects ➔ contribution to 'heat islands' (see above).
	Loss of street trees removed to accommodate pavement crossovers	26. Adverse effect on levels of air pollution due to loss of absorption of pollutants ➔ adverse effects on human health, contribution to global warming. 27. Loss of habitat for birds, insects etc., so fewer birds in the vicinity. 28. Loss of calming effect of trees ➔ higher stress levels and more tension and conflict between neighbours.
	Loss of garden habitat for wildlife (both above and below ground level)	29. Adverse effects on plant and animal life (i.e. biodiversity).
	Loss of grass verges removed to accommodate pavement crossovers	30. Adverse effect on plant and animal life; contribution to global warming; increased run-off etc. as above 31. Loss of aesthetic appeal.
	Loss of gardening activity	32. Less opportunity to get to know neighbours informally ➔ reduced community cohesion.
Changed appearance/ aesthetics	Replacement of soft green areas and trees with cars and hard unattractive surfaces	33. Reduced aesthetic appeal, character, visual appearance and attractiveness of the urban environment and its traditional architecture. 34. Reduction in community cohesion. 35. Reduced house prices when most or all of the front gardens in the street have been hard surfaced.
Loss of boundary structures (hedges, fencing etc.)	No barriers to wind	36. Increased levels of dust and hence air pollution (particulates).
	Loss of demarcation	37. Adverse effect on neighbour relations, community in general. 38. Loss of barrier between pavement and property increases risk of trespass and vandalism.

4.3 Possible solutions

There are various ways in which the hard surfacing of front gardens could be addressed. Measures could be taken to prevent it or to discourage it, and to encourage restoration of gardens which have already been extensively hard surfaced.

Below is listed a wide range of measures – including some sticks and some carrots - which could contribute. These have been drawn from a variety of sources including our earlier research; publications from the London Assembly, the Royal Horticultural Society (RHS) and the London Wildlife Trusts; communications from LA21 members in Ealing and other London boroughs, and ideas and suggestions from the volunteers and other concerned people in the borough.

- Publicity and education to raise awareness about the problems caused by hard surfacing front gardens and to explain why it is a not a good idea (including likely effect on house prices).

- Guidance and advice about front gardens, why they are important, and how to design and manage them easily and with minimum effort. A set of easy-to-maintain front garden designs could be compiled, with information on how to create and maintain them, appropriate to the gardens and houses in individual localities.

- For front gardens which are used for parking, guidance and advice about how to minimise the amount of hard surfacing, and about suitable surfaces to use. The RHS has recently produced some guidance and ideas[10], as did the Environment Agency in 2002[11]. In 1999 Ealing's LA21 Natural

[10] "Gardening Matters: Front Gardens", Front Gardens Advisory Service, Royal Horticultural Society, 2005; The Garden (the Journal of the Royal Horticultural Society), volume 130, part 11, November 2005.

[11] "Don't lay that Crazy Paving!" Environment Agency North East Area Office, Hatfield, 2002.

Environment & Biodiversity Project Group produced a leaflet (now out of print) on "Keeping your front garden alive", and other LA21s in London have produces similar materials.

- All publicity should be via a wide range of media, including advice on websites, in press articles, guidance (leaflets) from Council planning departments. etc., and carefully targeted, including to minority ethnic communities.

- A borough-wide or local area competition for front gardens, and for front garden designs, which are minimum maintenance and minimum hard surfaced – both with and without parking.

- The establishment of community gardening services which can take on the maintenance of front gardens for people who cannot manage it themselves and who might otherwise be tempted to hard surface.

- Incentives to remove existing hard surfacing from front gardens and reinstate them. As suggested by the London Assembly, this could be a London-wide initiative.

- The Government could amend the legislation on 'permitted development' to enable local authorities to require planning permission for pavement crossovers, as proposed by the London Assembly Environment Committee in its 2005 report.

- Ealing Council and other local authorities could refuse to allow pavement crossovers in roads where the amount of on-road parking would be reduced. This would prevent the 'domino effect' setting in, whereby reduced roadside parking triggers more householders to convert their front gardens to parking and apply for crossovers, and so on until most front gardens have been lost. The legal basis for this exists, having been established by the London Borough of Kensington & Chelsea.[12]

- Ealing Council and other local authorities could take action against illegal crossing of the pavement and consequent front garden parking where there is no legally constructed crossover. The survey estimated that around 5,000 front gardens in the London Borough of Ealing are being used illegally in this way. This would put the parking back on the roads instead of in the front gardens, and discourage further illegal front garden parking.

- Ealing Council and other local authorities' housing departments could introduce measures to prevent tenants from adding (more) hard surfacing in the gardens of the properties owned by the authority.

  "The front garden has been grass for as long as we can remember (at least 15 years). The tenant concreted over half the garden about a year ago and did the rest last weekend. He can now park his three old bangers without having to pay the recently-introduced residents' parking charge." (Feedback from a volunteer)

- Housing associations, other housing providers and private landlords could also be encouraged to do the same.

- Improved public transport to reduce car dependence and hence the number of vehicles that require parking, and more city car clubs to reduce the need to own more than one car or a car at all. (The survey indicates that areas with poorer public transport access have more front garden parking than areas where public transport access is good).

- In roads where most front gardens have been converted to parking, reorganise the road layout in various ways so as to re-introduce some green space. In roads where some but not all front gardens have been converted, rearrange the roadspace parking so that more cars can be fitted in, e.g. using chevron parking. Various designs for achieving this were proposed by the Urban Design Alliance in "Returning Roads to Residents".[13] These proposals, however, requires resident agreement which is often not easy to achieve or to sustain.

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[12] See Page 19 of the London Assembly's report on front gardens: "Crazy Paving: the environmental importance of London's front gardens", London Assembly Environment Committee, Greater London Authority, September 2005, www.london.gov.uk/assembly/reports/environment/frontgardens.pdf

[1313] "Returning Roads to Residents: a practical guide to improving your street", UDAL (Urban Design Alliance), 2000, www.udal.org.uk/projects

- In Controlled Parking Zones, Ealing Council and other local authorities could introduce a fee for providing access to properties with pavement crossovers, to reflect the inability to use the part of the road in front of the crossover for parking and consequent lost revenue. This would discourage people from converting their gardens for parking, and might even encourage some people to convert them back.

- Water rates which reflect the amount of front garden hard surfacing and the greater demands made on the surface water drainage system by the increased runoff resulting.

4.4 A note about the hard surfacing of back gardens

During the planning of the survey, and during the surveying itself, many local people raised concerns about the hard surfacing of back gardens. We did not have the skills or resources to include back gardens in the survey. However, their comments, and other anecdotal evidence, suggest that, in some parts of the borough, back gardens are also being hard surfaced at an alarming rate.

There is nothing to prevent people hard surfacing their back garden if they choose to. We have only a fragmentary understanding of what is happening and why. Some of it is patios and play areas. Some of it is in connection with increasing amounts of back garden development: offices, playrooms, spare rooms, dens, temples and other places of worship and all kinds of buildings are appearing in back gardens, which may not require planning permission[14]. And some of it seems to be intended to obliterate the garden altogether: there are reports of entire back gardens being hard surfaced.

[14] A structure in a rear garden is Permitted Development if it is (a) not greater than 3 metres high at eaves (b) not greater than 4 metres high at ridge (c) not less than 5 metres from main dwelling (d)not greater than 50% of area of site minus area of house. The use of the structure must be "incidental to the enjoyment of the dwelling house." The rules were relaxed in 1980's "to reduce numbers of planning applications".

APPENDICES

APPENDIX 1:

HOW THE SURVEY WAS CONDUCTED

Once the need to make a quantitative assessment of front garden hard surfacing had been agreed, various ways of doing it were explored. Aerial photographs were insufficiently clear, especially if trees or parked cars obscure the relatively small front garden area. Asking householders if we could measure their gardens, or if they would measure them themselves, risked a high refusal rate and atypical results, as well as being labour intensive and mathematically demanding. Using laser or infrared distance measuring devices to measure garden layouts from the pavement was impractical because of cost and also because of uncertain reliability when operated at ground level.

The solution eventually arrived at was to estimate the amount of hard surfacing by eye from the public pavement, thereby avoiding the need to enter any garden, and apply this estimate to the total area of each garden derived from the 'Planweb' maps of the borough's roads held by Ealing Council. It would be necessary to develop a measurement aid which would make estimates by eye reasonably consistent and reliable, and to take a random sample of roads across the entire borough. The results could then be grossed up to borough totals.

Definition of a front garden used in the survey

From the outset we intended only to survey the front gardens of **private dwellings**. In practice this means the front gardens of conventional houses generally designed for occupation by a singe household, although the front gardens of larger houses converted into flats, and of maisonettes and the like where the front garden is split or shared between (usually) two dwellings within the same property, are also included in the survey.

The front gardens of purpose-built blocks of flats and any other types of dwellings with communal gardens were excluded. Also excluded were the gardens of properties not in use as private dwellings, even if they had been in the past, such as hotels, hostels, B&Bs, care homes, doctors' and dentists' surgeries, offices, shops, cafes, car repair and any other types of occupation.

In defining the front garden we excluded the driveway as far as was practically possible, on the basis that it is not part of the front garden and is normally hard surfaced anyway. See Appendix 2 for guidelines about driveways given to the volunteer surveyors.

Sampling frame

Because it includes all residential roads (i.e. roads with properties in which voters live), the borough's Electoral Register was considered the most appropriate sampling frame. A listing of all roads in the 2003 Electoral Register, by electoral district and with the number of properties and registered electors in each, was provided by Ealing Council's Electoral Services. This list contained both roads and 'sub roads', the vast majority of which are blocks of flats and other buildings in multiple occupation.

All sub-roads were removed, and the list of roads was then de-duplicated to remove multiple occurrences of roads which run through more than one electoral district. This exercise reduced the number of roads available for sampling to 1,984.

The table overleaf shows the numbers of roads and properties in the Electoral Register before and after this process.

Numbers of roads and properties in the Electoral Register before and after removal of sub-roads and de-duplication

Ward	Area of the borough[15]	Total number of roads in Electoral Register*	Total number of properties in Electoral Register	Total number of roads in Electoral Register* excluding sub roads	Total number of properties in Electoral Register in roads excluding sub roads
Acton Central	Acton	122	6,019	86	5,266
Cleveland	Ealing N	179	5,856	88	3,977
Dormers Wells	Southall	124	4,198	66	2,992
Ealing Broadway	Ealing N	153	5,811	90	4,577
Ealing Common	Ealing S	166	5,800	104	5,008
East Acton	Acton	145	5,923	110	5,242
Elthorne	Hanwell	155	5,704	91	4,680
Greenford Broadway	Greenford	115	5,499	101	5,269
Greenford Green	Greenford	96	4,955	82	4,832
Hanger Hill	Ealing N	182	6,166	107	4,828
Hobbayne	Hanwell	93	5,326	63	4,607
Lady Margaret	Southall	77	3,990	68	3,904
North Greenford	Greenford	93	4,814	79	4,539
Northfield	Ealing S	113	5,403	89	4,977
Northolt Mandeville	Northolt	143	5,435	105	4,760
Northolt West End	Northolt	178	5,671	117	4,407
Norwood Green	Southall	124	4,332	95	3,881
Perivale	Perivale	81	5,061	71	4,942
South Acton	Acton	153	6,118	69	3,697
Southall Broadway	Southall	65	3,748	55	3,574
Southall Green	Southall	78	3,977	64	3,841
Southfield	Acton	123	6,082	95	5,637
Walpole	Ealing S	126	5,418	89	4,870
Totals		**2,884**	**121,306**	**1,984***	**104,307**

* totals are ward totals, therefore a small number of long roads that run through more than one ward are included in the total for each of the wards they are in.

[15] London Borough of Ealing is divided into seven 'areas' which reflect the various local centres within the borough. These areas cover from one (Perivale) to six (Ealing) wards. For the purposes of analysing and grossing up the data in this survey, the Ealing 'area' has been split into two parts: Ealing N covering the three wards north of the Uxbridge Road, and Ealing S covering the three to the south.

Sample and sampling method

A 10% sample of the 1,984 roads, i.e. 198 roads, was drawn by equal interval sampling from a random start point, i.e. every 10th after the random starting point. Since the list of roads from which the sample was drawn was in order of electoral district within ward, this approach ensured that all 23 wards in the borough were represented in the sample in proportion to the number of roads in each. If the same road was sampled in two different wards, the adjacent road was substituted (this occurred once).

The number of roads sampled in each ward, and the number of properties in these roads, is shown in the table below. **Not all of these properties have front gardens.** While the removal of sub-roads from the sampling frame took out most purpose-built blocks of flats, the sample still contained flats above shops and other commercial premises, houses which front directly onto the pavement, houses built to front onto hard-standing or communal grassed areas, and others with no discernible front garden (for further information on this, see the section on grossing up further on in this appendix).

Numbers of roads and properties in the sample

Ward	Area of the borough	Number of roads in sample	% of total roads (1,984)	Number of properties in sampled roads	% of total properties (104,307)
Acton Central	Acton	8	9%	756	14%
Cleveland	Ealing N	9	10%	267	7%
Dormers Wells	Southall	7	11%	249	8%
Ealing Broadway	Ealing N	9	10%	197	4%
Ealing Common	Ealing S	10	10%	382	8%
East Acton	Acton	11	10%	457	9%
Elthorne	Hanwell	9	10%	414	9%
Greenford Broadway	Greenford	10	10%	421	8%
Greenford Green	Greenford	9	11%	847	18%
Hanger Hill	Ealing N	10	9%	355	7%
Hobbayne	Hanwell	7	11%	949	21%
Lady Margaret	Southall	6	9%	265	7%
North Greenford	Greenford	8	10%	400	9%
Northfield	Ealing S	9	10%	406	8%
Northolt Mandeville	Northolt	11	10%	376	8%
Northolt West End	Northolt	11	9%	889	20%
Norwood Green	Southall	10	11%	366	9%
Perivale	Perivale	7	10%	346	7%
South Acton	Acton	7	10%	425	11%
Southall Broadway	Southall	5	9%	550	15%
Southall Green	Southall	7	11%	585	15%
Southfield	Acton	9	9%	634	11%
Walpole	Ealing S	9	10%	616	13%
Totals		**198**	**10%**	**11,152**	**11%**

Variation in road length means that the sample in some wards covers a greater proportion of properties than in others. Because of this, the survey results have been tabulated by areas of the borough rather than by individual wards. The exception to this is Perivale, which although an area of the borough consists of only one ward.

Development of the Hard Surfacing 'Ready Reckoner'

Because it would not be possible to enter and measure the hard surfacing in the sampled gardens, it was necessary to devise a means of estimating it with reasonable accuracy while viewing from the pavement. To do this we developed a Ready Reckoner, based on calculations of the amount of hard surfacing in about 40 front gardens in various parts of the borough, plan drawings and measurements of which were sent in by volunteers.

Analysis of these 40 garden plans revealed seven broad types of front garden hard surfacing which are summarised below.

Amount hard surfaced	Typical characteristics
Less than 15%	Short path between front door and side access or driveway; fairly rare except in a few areas.
15-20%	Traditional front garden: path between front door and pavement, ± narrow strip at front of house.
~ 30%	As 15-20% category but wider strip at front of house.
50% - 69%	Path, plus flower beds bordered by hard surfacing; often the original design, common in certain areas.
70% - 89%	No separate path; restricted flower beds; can be designed for parking or to minimise planted area.
90% - 99%	No separate path; planted area typically restricted to narrow strip at one or both sides; a design commonly used to accommodate parking.
100%	Totally hard surfaced, no planted / green areas at all.

For all except some of the most recently-built houses in the borough, front gardens where the original layout (created when the house was built) is still present tend to fall into one of the first four categories. Gardens where the original layout has been changed tend to fall into the last three.

These categories, together with diagrams to show garden layouts typical of each, were used to create the Ready Reckoner, which was used by the volunteer surveyors to assist in estimating the percentage of hard surfacing in front gardens. See Appendix 2 for the final version of the Ready Reckoner.

Conducting the survey of roads

At the end of 2004, the Ready Reckoner and the recording form developed for the survey were tested by seven volunteers, each surveying one or two roads in different parts of the borough. As a result of this pilot exercise, some minor adjustments were made to the recording form.

At Easter 2005 we put out a call, via community email networks and the local press, for 100 volunteers to help with the survey. Volunteers were asked to make contact and to indicate in which parts of the borough they would be prepared to work. Each was then sent a pack containing an allocation of one or more roads, instructions, the appropriate number of recording forms and a Ready Reckoner (see Appendix 2 for copies of each). The survey was also publicised at a few local events, and on community websites.

In the end a total of 61 volunteers worked on this part of the survey, some taking on several allocations of roads. Surveying started in March and finished in September 2005. All 198 roads in the sample were surveyed or otherwise accounted for except nine from five volunteers who, despite promising, disappointingly failed to complete the survey.

Completed survey forms were manually edited to ensure clarity for data entry, resolve queries, remove data inadvertently recorded for properties which were flats, not private dwellings or had no front gardens, and double-check on apparent inconsistencies, such as atypical or odd-looking data, or a garage being recorded without a pavement crossover. The sketches volunteers had been encouraged to make of unusual or unclear situations were often useful in resolving these issues. Further consistency checks were made after data entry.

Estimating front garden areas from the GIS data in 'Planweb'

For each sampled road, a list of all properties in the road recorded on the 'Planweb' GIS database was extracted into an Excel spreadsheet. For each property with a discernible front garden, the boundary of the garden was selected, excluding any driveway if discernible, and the area in square metres (m^2) automatically calculated by Planweb. This m^2 value for the property was output into the spreadsheet, and any assumptions made at this stage about boundaries, type of property, property numbers etc. were noted. Properties with no front gardens, e.g. above shops or ground floor residencies, were given a value of zero m^2.

A total of three volunteers worked on this part of the survey.

On completion of this stage, the extracts for each sampled road were consolidated into a single file, and the data checked and edited to take account of inadvertent inclusion of non-residential properties and of blocks of flats treated as sub-roads in the Electoral Register, the presence of blocks of flats not treated as sub-roads in the Electoral Register, multiple entries for properties in multiple occupation (typically houses converted into flats), varying formats of property numbers e.g. 1A-B, 1A+B, 1A&B, 1A/B, 1A-1B, 1A+1B, 1A&1B etc., and to allocate shared front gardens between the relevant properties on a pro-rata basis where there was insufficient information on Planweb to make a precise measurement.

At the end of this process two files of GIS data were created: one of all properties with discernible front gardens i.e. with an area greater than zero m^2, and one of the total residential properties on the sampled roads, irrespective of whether or not they had discernible front gardens.

Matching the survey data and the GIS data

The survey data was then matched with the GIS data file of properties with discernible front gardens. At the first attempt, all but 9.8% of the 8,000 or so survey records matched with GIS data for the corresponding property.

Mismatches were due to a variety of factors: to the surveyors recording separate gardens, typically for maisonettes, which in the GIS data are allocated to only one of the property numbers; to varying formats of property numbers; to some surveyors including properties which are not private dwellings (apparent from the GIS data but not so easy to spot from the pavement), blocks of flats and other buildings, on the basis of *'if in doubt, put it in'*; to gardens being clearly recorded by surveyors but not clearly discernible on the Planweb maps or inadvertently omitted from the original extract; to incorrect road numbers recorded by surveyors; to difficulties reconciling houses with names and no road numbers; to properties numbered 13 on the Planweb but something else in the road, and to data entry errors.

The mismatches were resolved by reference to the original survey forms, by checking against the GIS data and in some cases going back to the Planweb maps, and by making a few 'best estimates'.

On completion of this exercise, survey data for a total of 7,675 front gardens and corresponding GIS data was available for analysis. The distribution of these is shown in the table below. The number of roads surveyed is less than the number sampled. All but nine of these were due to these roads having no properties with front gardens in them (typically because all properties were flats, above commercial premises or purpose-built without gardens). The remaining nine were those which were not surveyed due to non-delivery by five volunteers.

Numbers of roads and properties in the sample and actually surveyed

Ward	Area of the borough	Number of roads in sample	Number of roads actually surveyed	Number of properties in sampled roads	Number with front gardens surveyed
Acton Central	Acton	8	8	756	484
Cleveland	Ealing N	9	9	267	278
Dormers Wells	Southall	7	4	249	124
Ealing Broadway	Ealing N	9	8	197	124
Ealing Common	Ealing S	10	8	382	211
East Acton	Acton	11	9	457	270
Elthorne	Hanwell	9	8	414	319
Greenford Broadway	Greenford	10	9	421	224
Greenford Green	Greenford	9	7	847	647
Hanger Hill	Ealing N	10	9	355	283
Hobbayne	Hanwell	7	6	949	694
Lady Margaret	Southall	6	5	265	247
North Greenford	Greenford	8	8	400	462
Northfield	Ealing S	9	9	406	314
Northolt Mandeville	Northolt	11	10	376	317
Northolt West End	Northolt	11	8	889	490
Norwood Green	Southall	10	8	366	189
Perivale	Perivale	7	6	346	263
South Acton	Acton	7	6	425	260
Southall Broadway	Southall	5	4	550	357
Southall Green	Southall	7	5	585	403
Southfield	Acton	9	7	634	425
Walpole	Ealing S	9	6	616	290
Totals		**198**	**167**	**11,152**	**7,675**

Grossing up the matched data to borough totals

In each of the sampled roads, the number of private dwellings with front gardens of area greater than zero m^2, and the numbers with no front gardens (i.e. a value of zero m^2) was compiled from the GIS data files, which, after editing, were considered to represent private dwellings as accurately as possible, and therefore to be comparable to the numbers of properties in roads, other than sub-roads, recorded in the Electoral Register.

The comparison between the two sets of data is shown in the table below. Generally speaking they are fairly similar. It is likely that the main discrepancies are due to house conversions (treated as one property for the purposes of front gardens in our edited GIS but as separate properties in the Electoral Register) and properties which appear on the GIS but which are not occupied by any registered electors and therefore do not appear in the Electoral Register.

Comparison of numbers of properties in sampled roads from GIS and Electoral Register

Ward	Properties with zero m^2 front gardens (GIS)	Properties with > zero m^2 front gardens (GIS)	Total properties (GIS)	% of properties with > zero m^2 front gardens (GIS)	Total properties (Electoral Register)	*Electoral Register total as % of GIS total*
Acton Central	347	490	837	59%	756	*90%*
Cleveland	6	282	288	98%	267	*93%*
Dormers Wells	86	189	275	69%	249	*91%*
Ealing Broadway	117	106	223	48%	197	*88%*
Ealing Common	83	210	293	72%	382	*130%*
East Acton	375	269	644	42%	457	*71%*
Elthorne	91	315	406	78%	414	*102%*
Greenford Broadway	228	227	455	50%	421	*93%*
Greenford Green	320	713	1,033	69%	847	*82%*
Hanger Hill	42	287	329	87%	355	*108%*
Hobbayne	222	781	1,003	78%	949	*95%*
Lady Margaret	4	260	264	98%	265	*100%*
North Greenford	24	460	484	95%	400	*83%*
Northfield	216	318	534	60%	406	*76%*
Northolt Mandeville	54	327	381	86%	376	*99%*
Northolt West End	398	492	890	55%	889	*100%*
Norwood Green	129	235	364	65%	366	*101%*
Perivale	71	275	346	79%	346	*100%*
South Acton	106	324	430	75%	425	*99%*
Southall Broadway	91	478	569	84%	550	*97%*
Southall Green	170	459	629	73%	585	*93%*
Southfield	167	480	647	74%	634	*98%*
Walpole	198	325	523	62%	616	*118%*
Total	**3,545**	**8,302**	**11,847**	**70%**	**11,152**	***94%***

We took the view that the two sets of data were sufficiently similar to enable us to estimate of the number of properties with front gardens in the borough by applying the with-front gardens proportions derived from the GIS data to the number of properties in the Electoral Register.

The table below shows this calculation. The proportion with area greater than zero m^2 was applied, on a ward by ward basis, to the total number of properties in roads, other than sub-roads, derived from the Electoral Register.

This gives an estimated total of 74,257 properties with front gardens in the borough, to which the survey data have been grossed up.

Estimate of numbers of properties with front gardens in London Borough of Ealing

Ward	Area of the borough	Total properties in roads in Electoral Register (excluding sub-roads)	Estimated % with front gardens (derived from GIS data)	Estimated number of properties with front gardens
Acton Central	Acton	5,266	59%	3,083
Cleveland	Ealing N	3,977	98%	3,894
Dormers Wells	Southall	2,992	69%	2,056
Ealing Broadway	Ealing N	4,577	48%	2,176
Ealing Common	Ealing S	5,008	72%	3,589
East Acton	Acton	5,242	42%	2,190
Elthorne	Hanwell	4,680	78%	3,631
Greenford Broadway	Greenford	5,269	50%	2,629
Greenford Green	Greenford	4,832	69%	3,335
Hanger Hill	Ealing N	4,828	87%	4,212
Hobbayne	Hanwell	4,607	78%	3,587
Lady Margaret	Southall	3,904	98%	3,845
North Greenford	Greenford	4,539	95%	4,314
Northfield	Ealing S	4,977	60%	2,964
Northolt Mandeville	Northolt	4,760	86%	4,085
Northolt West End	Northolt	4,407	55%	2,436
Norwood Green	Southall	3,881	65%	2,506
Perivale	Perivale	4,942	79%	3,928
South Acton	Acton	3,697	75%	2,786
Southall Broadway	Southall	3,574	84%	3,002
Southall Green	Southall	3,841	73%	2,803
Southfield	Acton	5,637	74%	4,182
Walpole	Ealing S	4,870	62%	3,026
Total		**104,307**	**71%**	**74,259**

The GIS (m^2) data accompanying each survey record has been grossed up by the same factors, thus providing an estimate of the total square meterage of front gardens in the borough.

For the small number of properties with areas[16], which could not be distinguished on the Planweb maps, the GIS m^2 data for the front gardens of such properties was reduced by 40%, to approximate to the amount of the front garden which is in reality the area.

[16] An area is a sunken space at the front of a property with a basement, that the basement's doors and/or windows open onto. The area therefore takes up part or all of what would otherwise be the front garden. Areas are usually found only on properties built before the First World War.

The reliability of the survey estimates

Sampling error

- The sample of 7,675 front gardens is highly clustered (by road), and because of this the estimated design factor is 3. This means that the effective sample size is 7,675/3 = 2,558, and the 95% confidence limits on a 50% result are ± 3.4, i.e. within the range 46.7% and 53.4%.

Other sources of error

- In the 2003 Electoral Register from which the sample was drawn, a small number of sub-roads were misclassified as roads, and vice versa.

- Most of the volunteer surveyors were very thorough and precise, but inevitably there will be variation in the accuracy with which they recorded information and estimated percentages of hard surfacing. Some may have over-estimated while others under-estimated.

- As noted in the report, the number of pavement crossovers may be slightly under-estimated because a few volunteers included them only if they provided direct access to the front garden, rather than to the property as a whole.

- The estimates of front garden area derived from the Planweb GIS maps were sometimes difficult to make, because it is not always clear where the garden boundaries are and if a driveway is present. There were also some discrepancies between the map information and the reports from surveyors 'on the ground', which in some cases required judgement to resolve.

- In addition, it was not possible to identify properties with areas on the map information, and so a global reduction of 40% was applied to the one percent of front gardens where the property has an area.

- The property totals derived from the Electoral Register and used to estimate the total number of front gardens in the borough do not include properties where none of the residents is a registered elector. This means that the grossed-up totals of front gardens and their surface areas are under-estimated to some extent.

APPENDIX 2: THE SURVEY MATERIALS

Ealing's LA21 Pollution & Public Health Project Group

Hard surfacing of front gardens research project : measurement phase : Instructions for Volunteers

Please read carefully before you start

Thank you very much for offering to help with this research project. We would like you to survey the following road(s):

Road name	Ward	Approximate no. of properties

As well as these instructions you should have a batch of Recording Forms to cover the number of properties in these road(s), and a 'Ready Reckoner' in a plastic cover. Also enclosed is a copy of the checklist of detrimental effects of hard surfacing of front gardens (derived from research – see below) for your information.

Introduction to the current research project

At present, local authority powers to control what people do to the surface of their front gardens are very limited. Except in a few conservation areas, there are no controls over what people can do to their front gardens, and "cross-overs" or "kerb drops" (altering the pavement to allow vehicles to cross it) are allowed as 'permitted development' under national planning regulations.

There is growing concern that hard surfacing of front gardens is becoming a serious environmental problem, and also a social issue. In 2003, we commissioned a review of the information available. One of its key finding was that very little is known about the amount of hard surfacing there is in front gardens, although there is accumulating

evidence that it is having a variety of detrimental effects. The full report of the review is on the LA21 website www.la21.org via the Projects and Groups pages.

Ealing's LA21 Pollution & Public Health Project Group is therefore aiming to conduct the first ever quantitative assessment of the amount and type of hard surfacing of front gardens in an urban area. We have a small grant from Ealing Council to conduct the computer analysis but we need the help of 100 volunteers like you to record the amount of hard surfacing in all the front gardens in a random sample of 198 residential roads across the borough (= 10% of the total number of such roads).

We will match the data recorded by volunteers with the dimensions of each front garden, taken from detailed street maps on a GIS database held in Ealing Council. This will enable us to estimate the total area of front gardens in the borough, and the area which is hard-surfaced. We will also be able to estimate the area under the different types of hard surfacing material used, and (working with Thames Water) the amount of rain water run-off resulting from this amount of hard surfacing.

The Ready Reckoner

The Ready Reckoner shows a range of standardised front garden layouts with varying amounts of hard surfacing (shown cross-hatched). It is based on a collection of about 40 real front garden plans/dimension drawings sent in by volunteers. You should use it to estimate the % of hard surfacing in each front garden in the road(s) you are surveying. Please make all estimates to the nearest 5%.

You may need to add together or subtract different elements to come up with a best estimate of the % of hard surfacing in each garden. You may find it takes a little while to 'get your eye in' and come up with consistent estimates, so practice on a few first, and use pencil for your early estimates so you can change your mind if you later feel you over- or under-estimated earlier on. If you come across any unusual situations or gardens where you feel it's impossible to make an estimate, record this on the back of the relevant recording form, together with a sketch showing the problem.

The Recording Form

This research **only applies to houses, including those converted into flats, being used for residential purposes**. On the road(s) you're surveying, there may be purpose-built block of flats, and also properties being used for commercial purposes (even if they were houses originally) such as shops, cafes and restaurants, garages, hotels, hostels, bread & breakfasts etc. These should NOT be included in your recording. Just go on until you come to some more residential houses.

The Recording Form has space for recording information about the front gardens of 12 properties. You will probably need several forms to survey 'your' road(s). Write the road name clearly in capital letters on each form used. Please give consecutive Form Numbers to each form used for one road, and do not mix 2 roads on one form.

When surveying, you must remain on the pavement at all times and not enter anyone's garden. If you cannot see the garden fully from the pavement, just estimate as best you can.

IMPORTANT! Definition of the area of a front garden: please EXCLUDE any driveway from your estimate of the front garden area. This is because driveways are normally hard surfaced anyway, and we're only interested in what has happened to front gardens.

- In some cases it may be difficult to see where the driveway ends and the garden begins. In such cases please define the driveway as the shortest distance between the road and the garage/carport or, for large gardens with driveways with separate entrance and exit, a route one car width wide between the entrance and exit.
- The front garden normally extends back to the building line. In a few cases, e.g. corner plots, it may extend further back. In these cases take it to a natural boundary or make a best estimate and sketch or note what you have done on the back of the relevant recording form, so we can cross-check with the GIS map.

'Areas' are also to be excluded from your estimate of the front garden. These are below ground, sunken spaces in front of properties with basements, for the basement's doors and/or windows to open onto, and are normally only found on properties built before the First World War. In such cases, define the front garden as the part at ground level (even if it is totally hard surfaced, as is sometimes the case where the property is very close to the pavement).

For each garden, 10 data items need to be collected. See below for points to note about each.

Item 1: Be sure to record the house number clearly at the top of each column so it can be matched to the maps on the GIS database.

Item 2: circle all types of hard surface present – there may be several - and write in any not on the list in the 'Other (WRITE IN)' box

Item 3: estimate to nearest 5% using the Ready Reckoner as described above. Ignore pots and tubs – we're only assessing the actual surface of the ground.

Items 4-6: boundary structures include the hedges, fences, walls, posts, chains, railings, gates and other upright structures which define the boundary of the property's curtilage (its entire grounds), including any driveway. Such structures must be fixed – moveable pots, troughs, seats etc. don't count. Nor do ditches, or rows of bricks, concrete etc. flush with the ground.

Item 7: 'areas', which take up part of what would otherwise be the front garden, are usually found only on properties built before the First World War, and are mostly in Ealing and Acton.

Item 8: we need to record presence of one or more garages or carports within the property's curtilage as a cross-check on whether there is, or was, a driveway. A difficulty may arise where garages originally attached or integral with the house have been converted into living space and have hence become part of the house. But we still need to know if such a garage originally existed. Therefore, please use local knowledge plus observation of other houses in the same road or the vicinity to assess if there was once a garage, and record accordingly. If in doubt, circle 'unsure' and if possible make some explanatory notes on the back of the recording form.

Treat carports in the same way as garages.

Item 9: seeks to establish whether the hard surfacing in the front garden is accessible to and used by cars or other 4-wheeled vehicles, irrespective of whether or not there is a pavement cross-over (see item 10).

Item 10: this records the presence of one or more cross-overs **constructed** across the pavement, i.e. the pavement has been lowered and sloped to allow a vehicle to drive across it. This normally involves re-laying of paving slabs, or their removal and replacement with tarmac. If the pavement is intact but ramps, stone blocks, wedges or other devices have been put across the gutter to make it easier for a vehicle to drive across, this is **not** a constructed cross-over so should be recorded as 'no crossover'. If in doubt, code 'unsure'.

Administration of the research

Please try to complete your allocated roads by ……..

If anyone asks what you're doing, say you're part of a volunteer research project estimating the amount of hard surfacing in front gardens in London Borough of Ealing, something that has never been done before (to best of our knowledge). If anyone wants to know more, refer them to the LA21 website www.la21.org/projects and groups pages, or make a note of their contact details on the reverse of one of your recording forms and we can send them some information about the project.

Please return all your completed recording forms and your Ready Reckoner to Andrew Lyon or Christine Eborall, project managers, at the addresses below.

We know that front gardens vary a lot, and despite having tested out the recording form, the Ready Reckoner and the Instructions, there are bound to be some cases that don't fit! So if you have queries please don't hesitate to contact either of:

Name	Andrew Lyon Senior Environmental Health Officer	Christine Eborall
Address	Ealing Borough Council Perceval House 14-16 Uxbridge Road Ealing London W5 2HL	1 Bruton Way Ealing London W13 0BY
Telephone	020-8825 7308 during office hours	020-8991 0006 evenings/weekends
Email	lyona@ealing.gov.uk	eborallc2@aol.com

Thank you very much indeed for your help! We look forward to receiving your completed recording forms.

Ealing's LA21 Pollution & Public Health Project Group: Research on hard surfacing of front gardens
Measurement phase (Spring 2005): Recording Form

Road name **IN CAPITALS PLEASE**!: …… Form No. for this road: ……..
Ward: …… Recorder name: …… Date ……../……../ 05

1. House no. (WRITE IN):												
2. Type(s) of hard surfacing present in front garden (CIRCLE ALL PRESENT)												
Rectangular / square paving	1	1	1	1	1	1	1	1	1	1	1	1
Crazy paving	2	2	2	2	2	2	2	2	2	2	2	2
Concrete	3	3	3	3	3	3	3	3	3	3	3	3
Asphalt/ tarmac	4	4	4	4	4	4	4	4	4	4	4	4
Brick (unsealed)	5	5	5	5	5	5	5	5	5	5	5	5
Stone blocks (unsealed)	6	6	6	6	6	6	6	6	6	6	6	6
Painted or sealed brick/ stone	7	7	7	7	7	7	7	7	7	7	7	7
Quarry (red) or ceramic tiles	8	8	8	8	8	8	8	8	8	8	8	8
Gravel or loose stones	9	9	9	9	9	9	9	9	9	9	9	9
Rubble/hardcore/broken material	0	0	0	0	0	0	0	0	0	0	0	0
Other (WRITE IN)												
3. Estimated % of front garden hard surfaced:	…. %	…. %	…. %	…. %	…. %	…. %	…. %	…. %	…. %	…. %	…. %	…. %
4. Are boundary structures present at the front? (as you face the property) CIRCLE ONE ONLY												
All (excluding pedestrian entry)	1	1	1	1	1	1	1	1	1	1	1	1
Part	2	2	2	2	2	2	2	2	2	2	2	2
None	3	3	3	3	3	3	3	3	3	3	3	3
5. Are boundary structures present on left hand side? (as you face the property) CIRCLE ONE ONLY												
All	1	1	1	1	1	1	1	1	1	1	1	1
Part	2	2	2	2	2	2	2	2	2	2	2	2
None	3	3	3	3	3	3	3	3	3	3	3	3
6. Are boundary structures present on right hand side? (as you face the property) CIRCLE ONE ONLY												
All	1	1	1	1	1	1	1	1	1	1	1	1
Part	2	2	2	2	2	2	2	2	2	2	2	2
None	3	3	3	3	3	3	3	3	3	3	3	3
7. Does the property have a basement with an "area"?(sunken space at front of property that the basement's doors/ windows open onto) **CIRCLE ONE ONLY**												
Yes	1	1	1	1	1	1	1	1	1	1	1	1
No	2	2	2	2	2	2	2	2	2	2	2	2
8. Does or did the property have one or more garages, either freestanding or attached to / integral with it? (with or without distinct driveway) **CIRCLE ONE ONLY**												
No garage	1	1	1	1	1	1	1	1	1	1	1	1
Single garage, freestanding	2	2	2	2	2	2	2	2	2	2	2	2
Single garage, attached/integral	3	3	3	3	3	3	3	3	3	3	3	3
2 or double garage, freestanding	4	4	4	4	4	4	4	4	4	4	4	4
2/double garage, attached/integral	5	5	5	5	5	5	5	5	5	5	5	5
Unsure	6	6	6	6	6	6	6	6	6	6	6	6
9. Can hard surfacing in front garden be accessed by vehicle(s), from either road or driveway? CIRCLE ONE ONLY												
Yes	1	1	1	1	1	1	1	1	1	1	1	1
No	2	2	2	2	2	2	2	2	2	2	2	2
Unsure	3	3	3	3	3	3	3	3	3	3	3	3
10. Does the property have one or more pavement crossovers constructed (which may be shared with neighbour)? CIRCLE ONE ONLY												
Yes, one or more crossover(s)	1	1	1	1	1	1	1	1	1	1	1	1
No crossover	2	2	2	2	2	2	2	2	2	2	2	2
Unsure	3	3	3	3	3	3	3	3	3	3	3	3

FOR COMPLICATED SITUATIONS AND THOSE REQUIRING ADDITIONAL INFORMATION, CLARIFICATION OR COMMENT, PLEASE WRITE OR SKETCH AN EXPLANATORY DIAGRAM OVERLEAF, STATING TO WHICH HOUSE NUMBER IT REFERS.

Notes: ❶*. Record information for* ***garden area only****: exclude driveways and equivalent areas which lead direct to garages even if they are not delineated from the garden. Hemispherical driveways: garden = area not required for in-out vehicle movement. Exclude basement "areas" below street-level from the calculation.* ❷ *Assess garden surface only: ignore plants in pots, troughs etc.* ❸ *Boundary structures include hedges, fences, walls, posts, chains, railings, gates etc.*

THE READY RECKONER